Vol 3 No 4 UK£1

COMMODORE

COMPUTING INTERNATIONAL

The Independent Commodore Magazine

IN THIS 96 PAGE ISSUE

Around Sound - Special Features

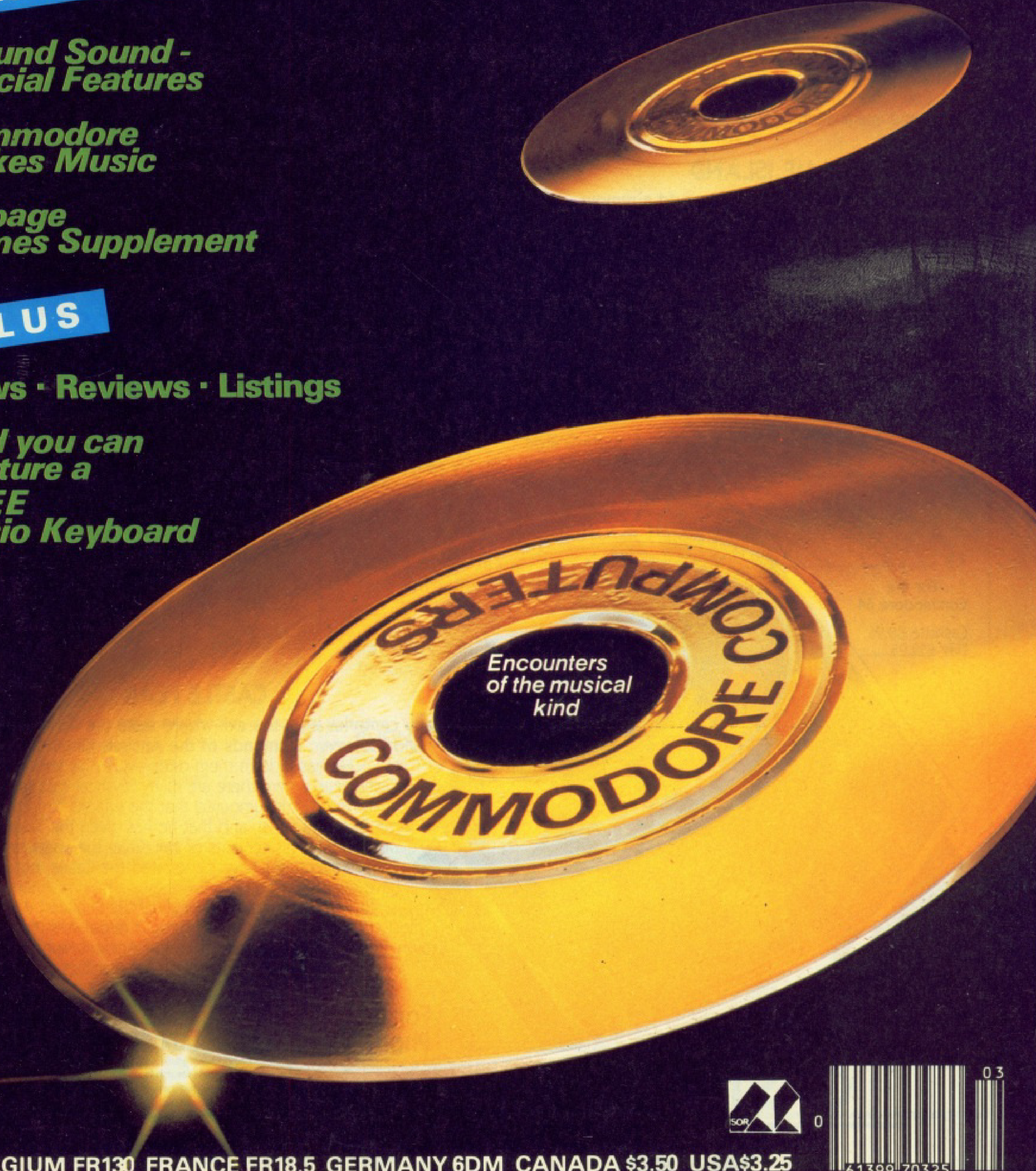
Commodore Makes Music

32 page Games Supplement

PLUS

News · Reviews · Listings

And you can capture a FREE Casio Keyboard



Encounters of the musical kind

BELGIUM FR130 FRANCE FR18.5 GERMANY 6DM CANADA $3.50 USA$3.25

Braingames

The tough nuts to crack!

Braingames bring you the most entertaining and fulfilling adventure and strategy games.

Our adventures combine strong story lines, high quality graphics and sound, to produce games you will want to play time after time.

Strategy games ranging from the White House to King Arthur's Court, from the oil business to a used car lot, will test your skills and imagination.

FLAME ISLAND

Throughout the seaports of the old world a rumour has spread — the monks of Flame Island have found the fabled Emerald of Power.

The origin of the Emerald is lost in the mists of time, however the stories suggest that it has esoteric powers of a mystical nature. It is suggested that the monks have placed the Emerald on a dias deep within their temple and have laid many devious traps to protect it.

Landing at the harbour of Flame Island, you must find the temple and retrieve the Emerald of Power. In order to escape safely, you must signal your ship to return to port and safely embark for home.

FLAME ISLAND

For the Commodore 64

Cassette £8.95
Disk £12.95

A sophisticated adventure with full graphics and sound.

CASTLE FEAR

For the Commodore 64

Cassette £8.95
Disk £12.95

CASTLE FEAR

Many centuries ago, the evil wizard stole the Golden Crown and the seven Diamonds of the Ancient Kings.

He has hidden them deep within his stronghold, Castle Fear, where there are many mystical creatures to guard them. It is rumoured that the wizard himself keeps the Golden Crown, and that he has given the Seven Diamonds to his servants of evil. Over the years, certain brave adventurers have penetrated the Castle, but none have ever returned.

To win the hand in marriage of the Princess, you must dare the evils of Castle Fear and return with the Golden Crown and the Seven Diamonds of the Ancient Kings.

A sophisticated adventure with full graphics and sound

For more information on the tough nuts Phone us on Brighton (0273) 608331 NOW

Postal enquiries to:—
BRAINGAMES Amplicon Group
Richmond Road, Brighton East Sussex BN2 3RL
Tel: Brighton (0273) 608331 Telex: 877470 AMPCON G

Braingames is a division of Amplicon Micro Systems Limited

COMMODORE
COMPUTING INTERNATIONAL
OCTOBER 1984

COVER STORY

Vol3 No4 UK£1
COMMODORE
COMPUTING INTERNATIONAL
The Independent Commodore Magazine
Around Sound - Special Features
Commodore Makes Music
32 page Games Supplement
PLUS
News · Reviews · Listings
And you can capture a FREE Casio Keyboard
COMPUTERS
COMMODORE
Encounters of the musical kind

Our theme this month is sound — an era in which interesting possibilities are arising for the home computer owner.

Editor . . . . Susan Pearce
Staff writers . . . . Sally Wood
Viola Gienger
Technical adviser . . . . Richard Franklin
Programmer . . . . Carl Graham
Advertisement Manager . . . Peter Chandler
Advertisement Executive . . . . . Paul Fenton
Subscriptions Executive . . . . Alison Stevens

Publisher . . . . Antony Jacobson

Cover Design . . . . Graham Baldock
Cover photography . . . . John Evans

Telephone 01-278 0333

Editorial ext. 274
Advertising ext. 280
ext. 286
Subscriptions ext. 274

Published by Croftward Limited.
Finsbury Business Centre,
40 Bowling Green Lane, London EC1

© Croftward Limited 1984

Distribution by Magnum Distribution Ltd,
Clerks Court, 18-20 Farringdon Lane,
London EC1R 3AU.
Printed by Chase Printers Group, London and St. Austell.
ISSN 0265-475X

Commodore Computing International - an independent magazine for Commodore computer users - is not connected in any way with Commodore Business Machines UK Ltd. It is published 12 times per year by Croftward Limited. The publishers do not accept liability for any incorrect statement or errors contained in material from independent sources or authors which may be reproduced from time to time.

NEWS 6
Commodore produces millionth computer at Corby, while prices rise

PRODUCT SURVEY 7
Our sound special starts with a look at music packages and speech synthesisers

MUSIC 15
Using computers in music at home and professionally

SOUND 20
Adding sound to your programs

LETTERS 28
You moan and groan and we do our best to help

BASIC PROGRAMMING 30
Figure it out with a maths quiz

MACHINE CODE 33
Copy up to four screens from the 64 to a 7-row printer

HINTS AND TIPS 41
Using floating pointers and arithmetic routines

PRODUCT NEWS 45
The latest hardware and software for Commodore users

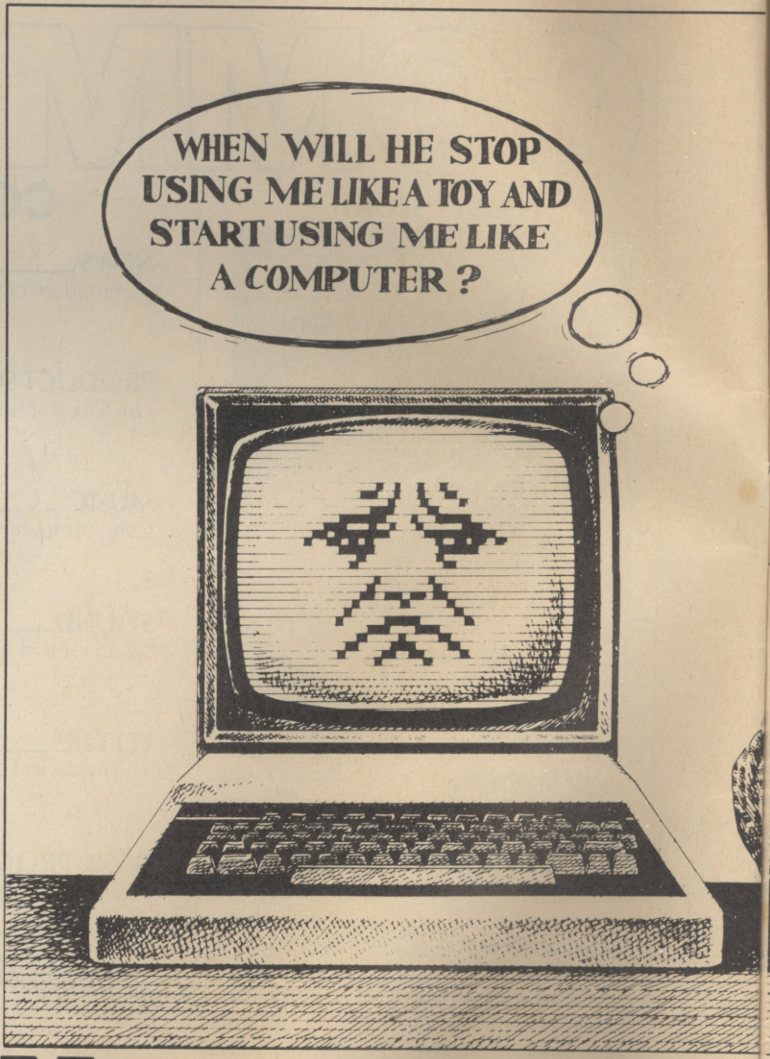
BUSINESS PRODUCTS 48
Especially for business users of Commodore machines

BOOK REVIEWS 51
We help you to steer a course through a sea of words

REVIEWS 53
Looking at four new products including Gilsoft's Quill

NEXT MONTH

CCI takes a look at the business end of the market next month with reviews of hardware and software, plus opinions from key Commodore executives.


WHEN WILL HE STOP USING ME LIKE A TOY AND START USING ME LIKE A COMPUTER ?

Now you and y
bring out the bes

First, a question.

Who do you think are the world's most avid consumers of microcomputers?

The ingenious Japanese? The fashionable French? The acquisitive Americans?

Believe it or not, it's we British who own more micros per person than any other nation on earth.

Yet, despite its amazing impact, the microcomputer has only just begun to scratch at the surface of our lives. Without doubt, the best is yet to come.

Use and Abuse.

In several recent surveys, some astonishing facts about micro use and abuse were revealed.

It was discovered that the micro is hopelessly under-utilised. If you're already a micro owner, your own experience may well confirm this unhappy state of affairs.

Brainpower. A source of knowledge.

For thousands of years, the key to self improvement has been in the hands of the written word. Now, thanks to the Brainpower range, it's very much in the hands of the micro.

As the Brainpower range demonstrates, this does not require prior knowledge of micros, or how they work.

The Brainpower concept has been devised as *integrated* applications and educational software. And its aim is to stretch both your mind and your imagination.

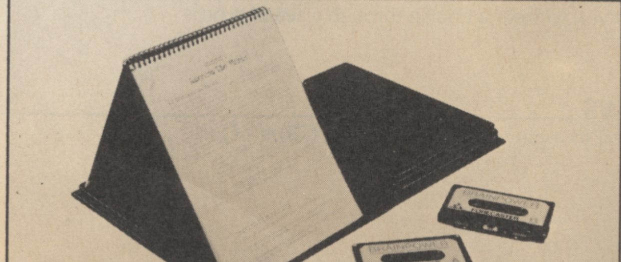
It offers a unique way to realise your own full potential and that of your micro. In a way you could *never* hope to achieve from the printed word alone.

In this respect, the Brainpower range stands on its own.

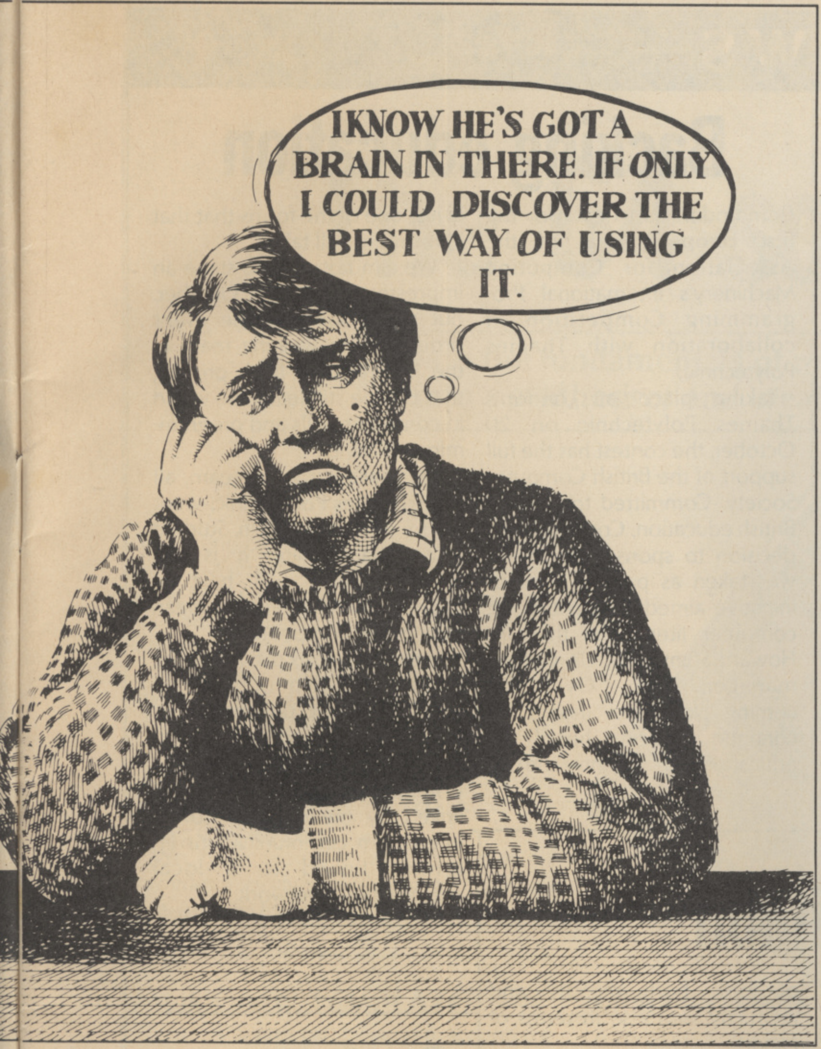
A unique concept.

All the Brainpower titles share one thing in common, apart from their stimulating subject matter, that makes them unique.

You will find each title comprises three distinctive elements: A teaching program that helps you to get to grips



Each Brainpower title provides a unique three part package: an applications program; a teaching program and an illustrated manual and interactive tutorial – integrated applications and educational software.

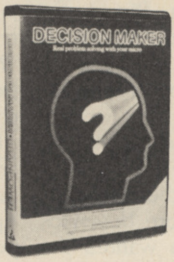

I KNOW HE'S GOT A BRAIN IN THERE. IF ONLY I COULD DISCOVER THE BEST WAY OF USING IT.

STAR WATCHER

The secrets of the heavens are yours. Isolate all the constellations as well as main stars for easy identification. Even turn stars and constellations on and off at will. Screen by screen, you will see exactly how the 1,500 brightest stars move through time and space. And all from any point on the Earth's surface at any time of the year.

Star Watcher is without doubt the definitive home observatory.

DECISION MAKER



Should you buy a new house? Change jobs? Have children? Start your own business? Such decisions should not be taken lightly. Armed with Decision Maker, you can be quite sure of examining every avenue, and arriving at a rational, structured answer.

If you value the way you run your life, you need Decision Maker.

NUMBERS AT WORK

Tackle all the number problems you're likely to face in daily and business life. From straightforward multiplication and division of fractions, through decimals, percentages, ratios, mark-ups and margins to compound interest, depreciation, VAT and PAYE.

Numbers at Work gives you a distinct edge, since you will be able to both understand and manipulate numbers at will.

PROJECT PLANNER

Project Planner teaches you how to divide even the most complex project down into meaningful components. Learn how to determine the length and importance of every single task, and those elements critical to the fulfilment of your plan. Even anticipate problems you hadn't envisaged.

You have the measure of any situation because you have the fullest possible grasp of all the factors which affect it.

your micro can
est in each other.

FORECASTER

Forecaster takes the guesswork out of forecasting, by accepting that tomorrow's events will be best predicted on the basis of today's facts. Armed with Forecaster, sales targets and growth trends, even sporting events and election results can be accurately and very quickly predicted.

Invaluable to you in both your private and business life.

with the subject at your own pace. An applications program to put what you learn into action. And finally, with each package, you get an expertly written book and interactive tutorial.

ENTREPRENEUR

Entrepreneur teaches you all the steps required to plan and start your own business. It will forecast your first 18 months' cash flows, generate your Profit and Loss Account and Balance Sheet. Help you in discussions with your bank manager and partners. Explain the notions of assets, liabilities, overheads, working capital, cash flow and break even point.

Invaluable to anyone who is planning a business venture.

	SPECTRUM 48K	BBC B Tape	BBC B DISK 40/80 Track	COMMODORE 64 Tape	COMMODORE 64 Disk
Tick your choice	£14.95	£19.95	£24.95	£19.95	£24.95
Decision Maker		N/A	N/A		
Numbers at Work		N/A	N/A		
Star Watcher		N/A	N/A	N/A	N/A
Entrepreneur		N/A	N/A		
Project Planner	N/A				
Forecaster	N/A				

Please add £1.50 for postage and packing

* I enclose a cheque or postal order, crossed and made payable to Triptych Publishing Ltd for £

* Please debit my Access/Barclaycard, number

NAME

ADDRESS

POSTCODE

TELEPHONE SIGNATURE

Send to: Triptych Publishing Ltd, (TBL Book Service Ltd) FREEPOST, CAMBERLEY, SURREY GU15 3BR. All goods fully tested and returnable if in any way defective. Allow 28 days for delivery. *Delete as applicable.

CCI 984

BRAINPOWER

Commodore buy Amiga

Commodore look set to start a war with Apple with their purchase of Amiga – a home computer using the same MC68000 chip as the Macintosh and, it is claimed, matching the high-quality graphics of the Apple box.

Commodore recently purchased Amiga, the tiny privately-held outfit, to the pique of former Commodore boss Jack Tramiel who also wanted the Amiga for his new company, Atari, bought from Warner Communications.

In fact Tramiel and Atari are suing Amiga over the fraud of three chips which they say were commissioned by Atari to design, when Atari was still owned by Warner Communications.

Likely specifications of the Amiga are a 128Kb CPU, expandable to 256Kb; one 5.25 inch 360Kb floppy drive, built in modem, and optional hard disk. This is Amiga's own spec and Commodore have the option to change it.

Both Commodore and Atari are working to produce a machine to compete with the Apple Macintosh, but at a lower price.

A figure that has been quoted for the Amiga is under $1000 (£775). Some reports say that Commodore are to launch the Amiga next month. However, Howard Stanworth, Commodore's UK general manager, says: "Precisely what form the machine will be marketed in is still being decided".

Backing education

Commodore is to sponsor the first European Heat of the Association for Computing Machinery's International Programming Competition in collaboration with Thames Polytechnic.

Taking place at London's Thames Polytechnic on 20 October, the contest has the full support of the British Computer Society. Committed to backing British education, Commodore's decision to sponsor the event was taken as part of a major initiative aimed at encouraging computer literacy in the UK. Howard Stanworth, UK general manager, says: "Over the coming year we intend to continue investing heavily in education in this country and this is just one of the forms that that investment will take.

"We aim not only to stage an impressive contest in October, but also hope that the event produces the winning team in the International final, proving that Europe still leads the world in computer skills and programming creativity."

Last year's European team, all from Thames Polytechnic, went on to form the British Student ACM chapter and it is this chapter which will host in October the first ever European Heat of the competition.

Teams are set six programming problems which must be solved in the shortest possible time. Solutions can be programmed in either Pascal or Fortran using Commodore 8000 computers linked by means of a Cortex Intercomm communications interface linked to a local minicomputer network.

CBM make a million

Commodore recently celebrated the production of the millionth Commodore computer to be manufactured in Corby since the temporary factory opened 15 months ago.

Brandishing the 64 in question at a recent press conference Howard Stanworth, Commodore UK's general manager, said: "This Commodore 64 is very special to us. It not only symbolises an unprecedented success story for us since it is the best-selling home computer in the world, but it says a great deal about Commodore's growing contribution to Britain in terms of jobs, both directly and indirectly, and also in terms of export".

Currently producing one home computer every five seconds, Commodore say that this rate will double when production is up to full capacity.

At this point we must apologise for the gremlins that found their way into a news story in last month's CCI which stated that Commodore were producing 2,000 computers a month. This should, of course, have read every week. Otherwise it would be a couple of years yet before Commodore could have celebrated their millionth computer produced in Corby! Sorry.

Both the C16 and Plus/4 will also be manufactured in Corby. Both have also suffered a price increase since first announced. The C16, which is being sold as a complete starter pack, retails at £133.99, while the Plus/4 is up to £299.99. Stanworth blamed these price increases on the changing rate of the American dollar.

De-bugged 64

A couple of interesting snippets for anyone who has bought one of the 64's manufactured in Corby. commodore have made a couple of (unannounced) changes.

In the old 64's there was a bug in screen editing due to the linking of lines. When you wanted to make a character appear on the screen by POKEing, you would have to POKE to screen memory, plus colour into colour memory, before the character would appear. Modifications have been made to the Kernal of the machine and now all you need to do is POKE to screen and the character will appear straight away.

The 64 sounds off

Learn the fundamentals of music or transform your 64 into a synthesiser and create musical compositions

The sound capabilities of the 64 are already above average for the home computer. Now there are numerous music packages available catering from the beginner to the advanced musician.

There are programs to teach the fundamentals of music; to experiment with different sounds, tempos and rythmic styles; to transform the 64 into a synthesiser; to enable programmers to create tunes and even copy sheet music directly by writing notes on the staves.

We have picked a selection of music programs to give you an idea of what is available on the market.

MULTISOUND SYNTHESISER
ROMIK

MUSICALC TEMPLATES

These templates can be used to extend the bumber of pre-recorded tunes on Musicalc 1. Thirty-two scores and sounds can be used in any combination as a basis for compositions. By using the slider controls with templates, sounds and timing can be altered.

Templates currently available include Latin/American rythms, New Wave/Rock and the Beat File, which contains a set of drum rythms.

Each disk costs £15.

Contact: Musicalc UK, Paradox Group, The Metrolpolitan, Enfield Road, London N1. Tel: 01 241 2448.

MUSICALC 1

A three-voiced music synthesiser with slider controls, modulators, transposers, a score composition panel and step sequencer. Thirty-two pre-programmed melodies can be played. In addition personal compositions can be performed in styles ranging from Classical to New Wave and stored for later playback. Disk costs £45.

Contact: Musicalc UK, Paradox Group, The Metropolitan, Enfield Road, London N1. Tel: 01 241 2448.

MULTISOUND

A musical synthesiser program enabling a wide variety of sounds to be created – musical instruments such as piano, violin and flutes and special effects. The 64 can be used as a musical keyboard or to compose tunes which can be saved on tape. Eight full octaves can be utilised and a visual display provides feedback on play as well as individual notes to be entered in preset mode. Background drum rhythms can also be used. Available on cassette for £14.99.

Contact: Romik, 272 Argyll Avenue, Slough, Berks. Tel: 75 71535.

MUSICALC 2

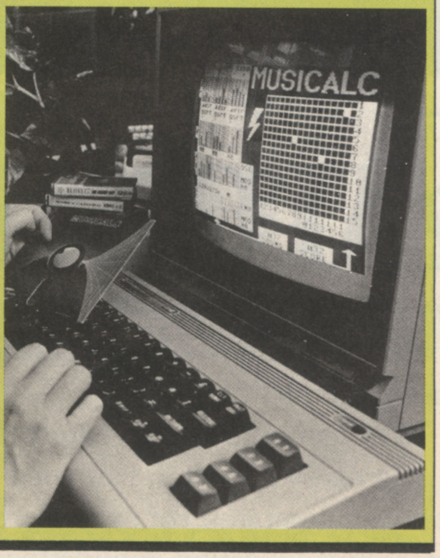
Operates with Musicalc 1 to print out compositions in standard music notation. No knowledge of musical notes is necessary. It also improves Musicalc's facility by allowing compositions to link 32 scores up in various combinations. Musicalc 2 will also enable Musicalc 1 to be linked to electronic instruments such as Drum machines and keyboards. Disk retails at £31.

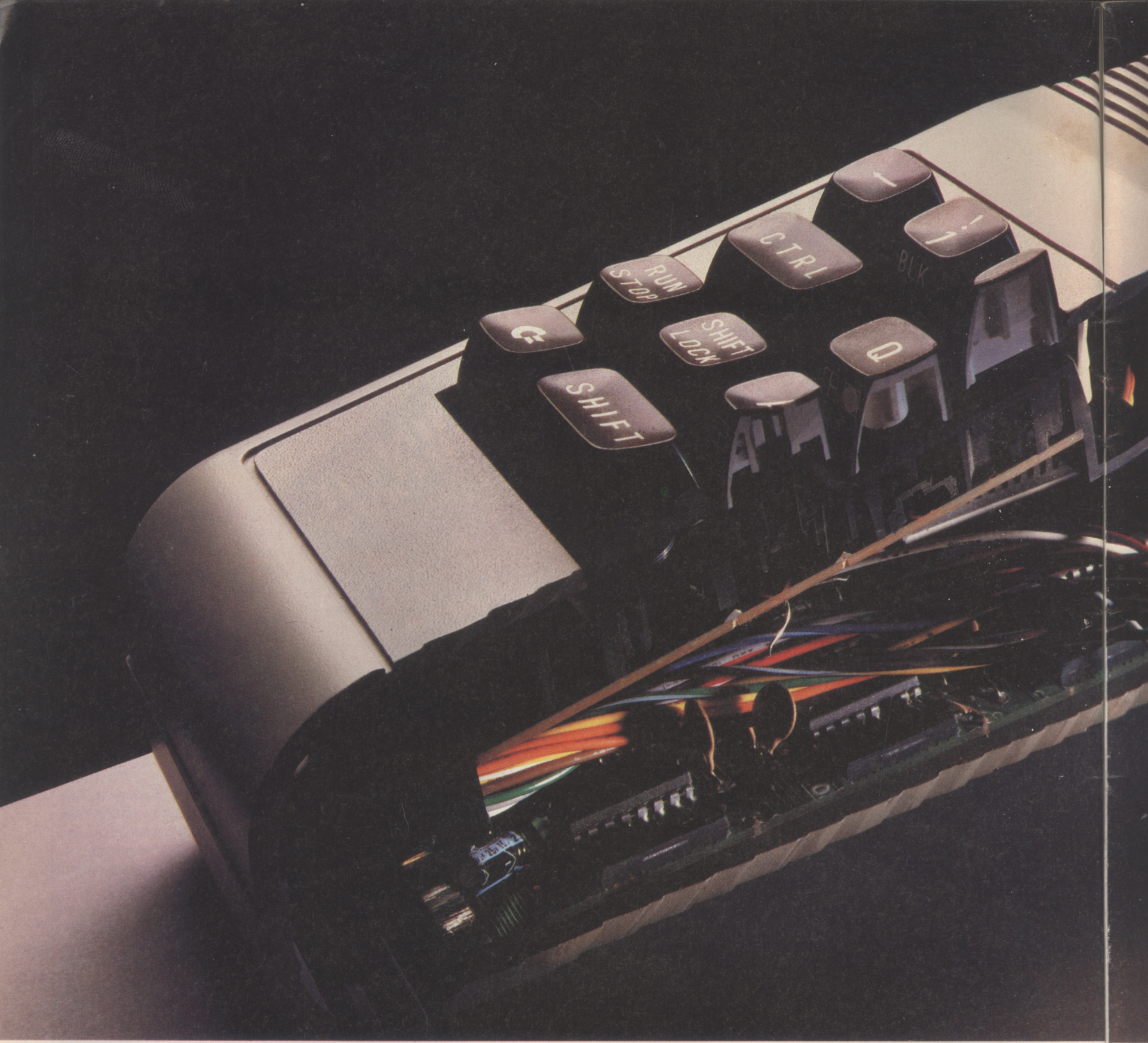
Contact: Musicalc UK, Paradox Group, The Metropolitan, Enfield Road, London N1. Tel: 01 241 2448.

MUSICALC 3

The 64's keyboard can be customised to play scales. Eighty present scales are provided with the package. Scales can be transposed, combined, and moved on Musicalc 3. The program operates with Musicalc 1 as well as independently. Disks retails at £31.

Contact: Musicalc UK, Paradox Group, The Metropolitan, Enfield Road, London N1. Tel: 01 241 2448.





Are you only using

To only play games on a Commodore computer is like asking Albert Einstein to work out the square root of four.

The computer's brain barely ticks over.

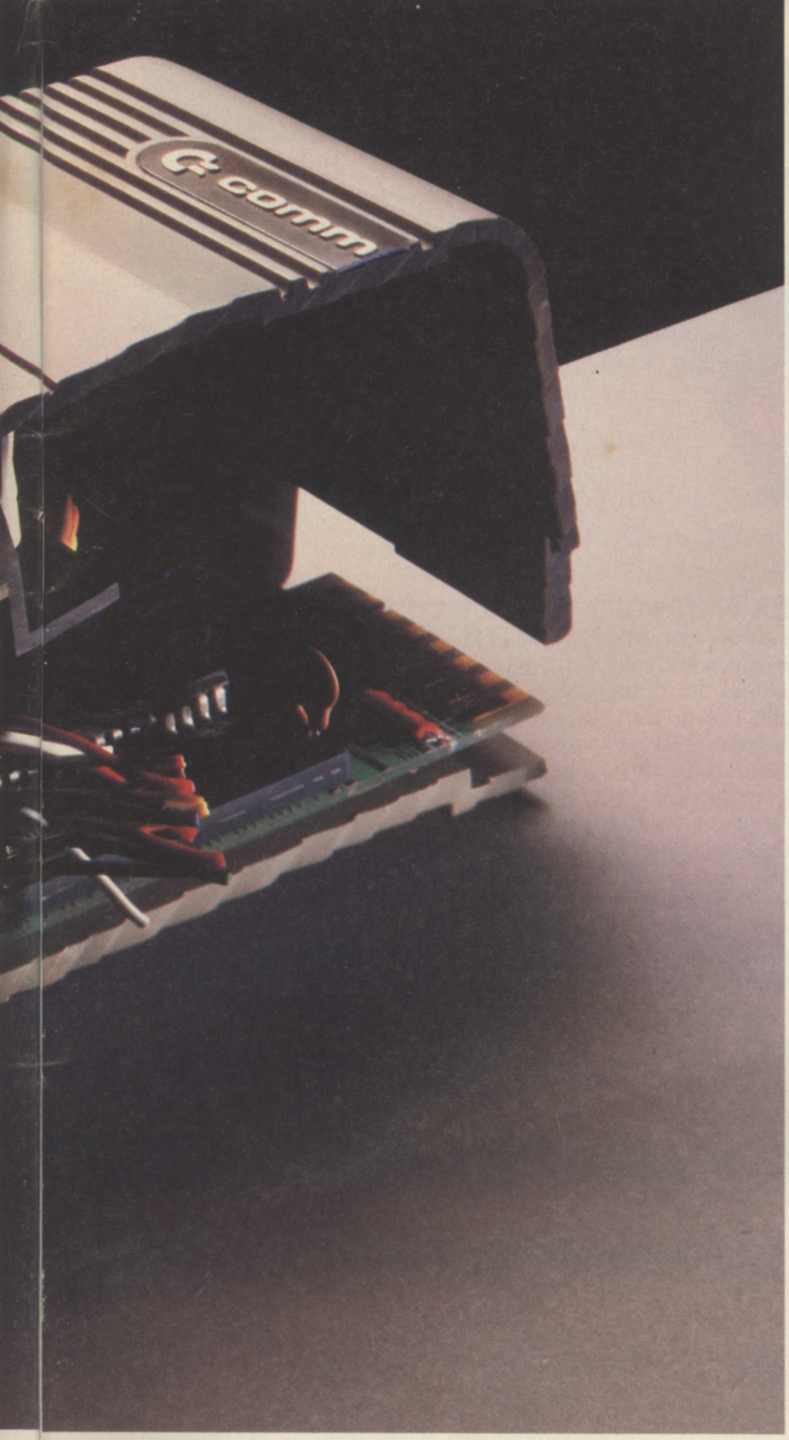
To really stretch it, you need more interesting software programs. For example, record keeping, interactive education, stimulating adventure games or word processing.

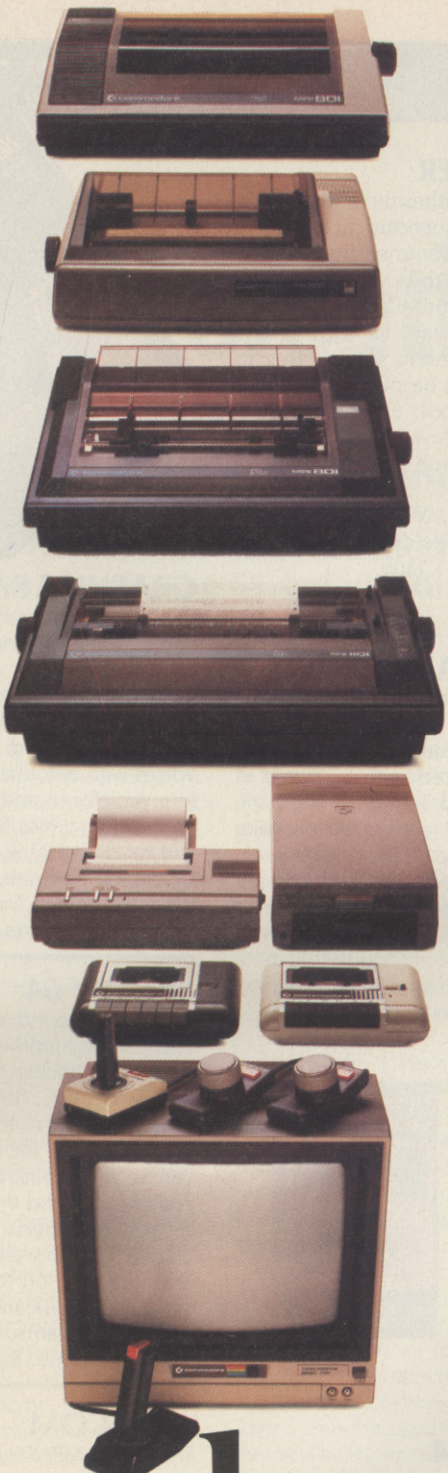
And for those you need peripherals.

Like a Commodore disk drive, a really fast storage and retrieval system with a vast memory.

Or a Commodore cassette unit, the inexpensive way of loading and storing programs.

For those who like the idea of text and graphics being more alive and having greater clarity than on a TV, there's the Commodore colour monitor.





COMMODORE MPS801 ☐
Dot matrix printer. £230.00.
Tractor feed. Print speed:
50 characters per second.

COMMODORE MPS802 ☐
Dot matrix printer. £345.00.
Friction feed for standard
paper. Print speed:
60 characters per second.

COMMODORE MCS801 ☐
Dot matrix colour printer.
£399.99. 7 colours including
black. Print speed:
38 characters per second.

COMMODORE DPS1101 ☐
Daisy wheel printer. £399.99.
Letter quality print on
standard paper. Print speed:
18 characters per second.

COMMODORE 1520 ☐
Printer plotter. £169.99. For
charts and graphs. Print speed:
14 characters per second.

COMMODORE 1541 ☐
Disk drive. £229.00.
170K memory. 5¼″ diskette.

COMMODORE 1531 ☐
Cassette unit. For Commodore
16 and Commodore plus/4.

COMMODORE 1530 ☐
For Commodore 64.
£44.95 each.

COMMODORE 1701 ☐
Colour monitor. £230.00.

JOYSTICKS ☐
(prices from £7.50)

PADDLES (£13.50). ☐

Details correct at time of going to press.

1/10th of your brain?

And for hard copy, there are our four printers and a printer plotter. These will preserve on paper–in colour, black and white, chart form, graphs or text, the fruits of all your labour.

Finally, for more exciting games, there are joysticks and paddles.

So use your brain. And make sure you use all of your computer's brain.

FOR FURTHER INFORMATION, TICK ONE (OR MORE) OF THE BOXES ABOVE AND SEND TO THE COMMODORE INFORMATION CENTRE, 1 HUNTERS ROAD, WELDON, CORBY, NORTHAMPTON NN17 1QX. TEL: CORBY (0536) 205252.

NAME

ADDRESS

PECCI1084

BY APPOINTMENT TO HER MAJESTY
THE QUEEN. MANUFACTURERS OF COMPUTER
BUSINESS SYSTEMS. COMMODORE BUSINESS
MACHINES (UK) LIMITED. CORBY.

commodore

PRODUCT SURVEY

MUSIC MASTER

A programmable synthesiser with an automatic rhythm and sequencing capabilities. It contains 34 pre-programmed rhythms and patterns and two further rhythms can be composed by user. An edit and playback facility provides a means to entering and playing three part music scores. Two to three recordings can be played back at a wide range of tempos. Program also includes graphical displays of keyboards and music 'staves. It retails on cassette for £17.95 and on disk for £19.95.

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex. Tel: 01 861 1166.

DANCING FEATS

A program enabling programmers to experiment with different sounds, tempos and rythmic styles. It is menu-driven and the programmer is confronted with a choice of Bass, Beat, Style and Tempo. If Bass, the lowest note in music, is chosen the following musical styles can be used – Jazz, Rock, Blues and Boogie Woogie. Musical compositions can be created with the various sounds and saved. Retails at £6.95 on cassette.

Contact: Artic, Main Street, Brandesburton, Driffield. Tel: 0401 43553.

DANCING FEATS

ULTISYNTH 64
MUSIC PROCESSOR FROM
QUICKSILVA
Author
Nalin Sharma
COMMODORE 64

ULTISYNTH 64

Ultisynth enables the 64 to operate as a musical synthesesiser. Various musical sounds for instance the piano, violin, woodwind, drums or cymbals can be played along with the programmers own or any of the six preset rhythms. Sound effects such as explosions, birdsong and trains can be included in programs. Other features include four waveforms, synchronization, recording and editing facilities. Two user defined rhythms can be created. Retails at 14.95

Contact: Quicksilva, 13 Palmerstone Road, Southampton. Tel: 0703 20169.

HesWare
Graphics BASIC
Diskette for Commodore 64

GRAPHICS BASIC

Primarily a program enhancing the 64's BASIC with additional commands to create complex graphics, sprites and animation with easily understandable English commands, the program also features similar facilities for sound. It can generate three voices with automated background sound, four waveforms and four envelope shaping controls. Graphics Basic requires a joystick and retails at £27.95 on disk.

Contact: Hesware, Thorn EMI, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333.

SYNTHY 64

Music and sound synthesiser for the 64. Enables programmers to create music and sounds by adding a set of powerful commands to BASIC. Three voices can be played simultaneously over a range of eight octaves and in addition the character of each voice can be varied. Instrumental sounds such as piano, banjo and drum can be synthesised as well as special effects varying from chimes to wah-wah. Sample compositions are included on the program which is available on disk and retails at £14.95.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 5244304.

MUSICOM

The Casio MR-200 when inter-faced to the 64 can either be programmed with a BASIC program, (a slow, but effective method) or used with Musicom, a music editor approved by Casio. It enables the user to produce a very wide range of performances ranging from single note melodies with auto-accompaniment to eight note polyphonic keyboard virtuoso arrangements from original music scores. the program also has editing control facilities and built in timing checks. Music can be stored on cassette. Retails at £9.95 on cassette.

Contact: Micro Musical, 37 Wood Lane, Shilton, Coventry. Tel: 0203 616760

THE COMPOSER 64

This music composer/synthesiser creates tunes and also allows sheet music to be copied directly by writing notes on the staves. The pre-programmed instruments in the program include woodwind, organ, guitar and harpsichord. Other features such as three voices, 15 range octave, four combinable wave forms, tempo control can be used to create compositions which can then be stored. It is available on cassette for £8.95 and on disk for £10.95.

Contact: Vulcan Computing Dept (C2), 32 Guildford Road, Farnham, Surrey. Tel: 0252 724182.

SYNTHESOUND

Transform the 64 into a music synthesiser. Various sounds and special effects can be created such as Bagpipes, Flutes, outer space panic, chirping birds. Solo and accompaniment keyboards are provided on the program. Features include a real time clock, eight waveforms, four envelope shaping controls, three voices and eight filter modes and 256 pitches or presets can be stored. Retails at £27.95 on disk.

Contact: Hesware, Thorn EMI, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333.

BRAVO

An introductory music program for beginners, Bravo teaches the fundamentals of music in six sections. Note Tutor and Symbol Tutor present the treble clef, pitch names and different note lengths. Name the Notes and Play the Songs are games ultilising knowledge gained in other sections. Free Play teaches you pitch in relation to the 64's keyboard and Mini-Composer puts everything together enabling melodies to be played with various instrumental sounds. Requires a joystick. Costs £22.95 on disk.

Contact: Hesware, Thorn ECI, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333.

HesWare
Bravo!
For Commodore 64

Computer conversation

"Argle bargle muffled moof" – speech synthesis at its worst! Electronic speech is not always BBC English, but Sally Wood was pleasantly surprised at the quality of some of the Spech Synthesisers currently on the market for the 64 and VIC 20.

Artificial speech has interested people ever since the Victorian days when they attempted to simulate speech by operating models of the human vocal tract by hand. Home computer owners now face a bewildering variety of speech synthesisers of an equally confusing range of prices and quality to choose from.

The recent phenomena of home computer owning households and the mass production of special chips designed for speech synthesis has prompted many of the companies to develop them.

There are two types of speech synthesiser, those utilising a library of sounds, the Phenome system or the digitisers.

Research into language has found that there are a number of phenomes or groups of sounds making up a language. These sounds, known as allophones, can be programmed onto a chip together with the means to link them up to create words. An almost infinite vocabulary can be created.

There seems to be a number of different types in this group. The more cumbersome synthesisers have to be programmed by PEEKing and POKEing the values into memory.

The text to speech synthesiser is becoming increasingly popular. Words typed straight into the computer are repeated out loud.

The disadvantage of the phenome system is that the voice sounds like a cross between a drowning man and Doctor Who's Daleks, although, to be fair, most words can be understood if you listen carefully.

Digitisers sound more human because the human voice is pre recorded and burned into the speech chip. The disadvantages are that only about 200 words can be stored and they have to be predetermined. There is not so much potential for the peripheral market, but they have a bright future in other areas of speech synthesis, for example education.

The human voice covers a wide range of frequencies – high pitched to low and deep and home computer synthesisers cannot hope to emulate this range. Speech 64 from Currah does have four voice intonations and in some applications, the voice tone used can be vital. A fairly deep male voice is preferred for business and home applications whereas in the Military services, a womans voice is preferred because the experts reckon that lonely young fighter pilots and ship's navigators will pay more attention!

In the past year, software companies have started to incorporate speech into their games. Interceptor's Tales of the Arabian Knights and Bug Byte's Twin Kingdom Valley, both include speech, but not in a very active way. Lines of text are merely repeating text already on the screen.

Rod Holland, Sales Manager of Currah forsees a great future for speech synthesis especially in the games and education field. Most games at the moment utilise sound and Gyruss from Parker Software is one of the best examples. Bach's Tocatta and Fugue in D Minor contribute a lot to the excitement and enjoyment of the game.

Perhaps in the near future speech will also become an integral part of a game or a program.

Currah have generated some interest among games manufacturers with their unit and in the next few months more and more programs are going to include speech in a much more interactive way than previously. Anirog's new game PC Fuzz utilises speech actively. Adventure games hold numerous possibilities for speech. Evil wizards, cunning creatures and strange voices could pose crucial questions or boom out commands which if not answered correctly or followed would result in disaster for the player.

Apart from the comparatively frivolous games world, numerous exciting possibilities exist in education. In particular reading and spelling for children and in computer assisted learning programs for the blind, partially sighted and mentally handicapped where printed displays are inappropriate.

A speech program which says letters and words as it is written, may help with spelling or pronounciation in reading. Blind or partially sighted people could perhaps learn to touch type as each key pressed would say a letter and help mistakes to be corrected.

Business and commerce also hold opportunities for speech synthesis. Washing machines fitted with a self diagnostic mechanism would save the housewife pounds. If anything went wrong the machine could actually tell the housewife what it is; your fanbelt has snapped or the pipe is blocked, thus saving a service bill. Already some cars use speech to inform occupants that their lights are on or the seatbelts aren't properly locked. The 64's timing mechanism could be utilised with a speech synthesiser to say 'wake up' in the morning – an effective alarm, although it can't make tea yet – yet! Speech synthesis could also be used in burglar proofing a house. Linking a unit up to the windows and doors could be triggered off by any forced entries and a 'stop thief' mechanism activated.

The possibilities are numerous and in the next few years the speech synthesiser potential may be developed to the full. Hopefully we have prompted your imagination and perhaps speech would add an extra dimension to your programming.

Speech Synthesisers for the 64 and VIC 20 are still in the games peripheral stage, but I think that will change.

SPEECH 64

The most important test for any device purporting to be a speech synthesiser is, of course, whether it actually does speak. Anything can mumble and squawk, but if you can actually understand what the computer is saying, then the device has passed its first qualifying test.

Speech 64 passed with flying colours and although some words sounded a bit obscure, for instance "ragged", the majority of words were perfect, albeit slightly inhuman.

The device is small and black and plugs into the cartridge expansion port at the back of the 64. The attached DIN plug fits snugly into the Audio/video socket. Absolutely nothing to it and operating it is even easier.

All that is necessary to get the computer talking is to tap INIT (+ RETURN) on the keys and it's ready to go. From then on, every single character that is typed in is repeated. There are four voice intonations although they are on the deep side.

To get the 64 to say a whole sentence, SAY is typed at the beginning of the line and the sentence is enclosed with speech marks: SAY "a long sentence" (+ RETURN).

Speech 64 is a text to speech synthesiser, but it uses the allophone system so not all words can be typed in as they are spelt. The English language is full of quirky pronounciations and spellings. For instance "sew" and "few" look the same, but sound completely different. Currah have included 58 speech sounds and four pauses and these can imitate most English words.

A system of square and round brackets are used to help the computer distinguish between single allophone sounds in a word. Allophonic words can be mixed with normal text. For example: SAY "I come from [haw(ii)(e)]" which when said would be "I come from Hawaii".

A speech buffer holds up to 25 seconds worth of speech and is extremely useful when you want the 64 to repeat long sentences. Incorporating the speech into your own programs – in both Machine Code and Basic is quite easy especially if you follow the manual instructions carefully. The sample program – The Speaking Clock may be a help.

The manual is excellent and has lists of allophones, pronounciations and deals clearly and concisely with the Speech 64 operation.

Currah hope that people will use it in serious programming rather than just a gimmick. It is certainly not a gimmick and I felt very impressed with it.

Product Name:
Speech 64
Product:
Speech Synthesiser
Company:
Currah Computer Components Ltd, Hollymount, Wooler Road, Hartlepool, Cleveland. Tel: 0429 34511
Hardware Requirements:
CBM 64
Applications:
Pure fun, can be used in programs, in educational games
Documentation:
Extremely clear and concise manual
Price:
£29.95

CHATTERBOX

Chatterbox has quite a history behind it. Currah designed it and Adman Electronics marketed it under a different name – Speech Synthesiser for the VIC 20. Currah are now back to selling it themselves under its former title – Chatterbox!

As the same company designed both synthesisers, Chatterbox and Speech 64 bear many similarities in operation, although the latter is a much improved version.

The device is creamy coloured and has an amusing picture of two Jack in the Boxes on its front. Connecting it to the VIC is easy. The unit plugs into the expansion slot and has two connector leads. One fits into the TV modulator plug and the other 5 pin DIN plug attaches to the displaced TV modulator plug.

Once in, it is ready to be programmed to speak immediately. It doesn't have a text to speech function and every word has to be typed in as it sounds using the allophones. Strings of words have to be followed by a SYS command and sentences of over 30 allophones will need more than one of these SYS commands.

I'm afraid that having been spoilt with Speech 64, Chatterbox just seems to be cumbersome to program.

However it is about the only speech synthesis device for VIC 20 owners and will have to do for the while. Actually the speech is quite good and the manual is very detailed in its explanation of allophones and gives numerous useful charts and lists.

Chatterbox can still chatter and although it has been upstaged by Speech 64, it is still a good product.

Product Name:
Chatterbox
Product:
Speech Synthesiser
Company:
Currah Computer Components Ltd, Hollymount, Wooler Road, Hartlepool, Cleveland. Tel: 0429 34511
Hardware Requirements:
VIC 20
Applications:
Making the computer talk
Documentation:
Excellent manual with sample program, clearly laid out information
Price:
£19.95

JCB MICROSYSTEMS

A vocabulary of 200 pre-defined words is one of the features of the new JCB Microsystems Speech Synthesiser that allows the user to create whole sentences when the words are combined with the allophones.

The unit has text and numeric capability, the latter of which includes exponential forms. And you won't have trouble understanding the JCB – it speaks proper English for numeric as well as textual expressions. For example, the computer will say the number 10,246 as ten thousand two hundred forty-six rather than merely saying each numeral in the number group.

When it is speaking text, the synthesiser has the ability to say up to 40 words with one command and pauses can be inserted to give the effect of a comma in a written sentence.

The package, which retails for £29.95, allows the user to intermix speech with any graphics that are on the screen without interrupting the speech. In case of a mistake, special error messages flash up giving more detailed information rather than simply flashing the ambiguous "syntax error".

The synthesiser cartridge plugs into the back of the Commodore 64 and comes with a detailed user manual.

Contact: JCB Microsystems, 29 Southbourne Road, Bournemouth, Dorset BH6 5AE. Tel: 0202 25417.

COMMTALK

The Commodore VIC 20 hasn't been neglected in the speech synthesiser market. The irish company Andor has come out with a cassette form synthesiser compatible with the Commodore 64 as well as the VIC 20.

Commtalk has no pre-set vocabulary, but a spokesman for Andor says the possibility of vocabulary is infinite because the allaphones are used to form words. The system utilizes a standard voice although it can be varied (to sound gruff, for example) by adjusting the frequencies using the Commodore's sophisticated SID chip. Once again, graphic displays on the screen will not interrupt the speech mechanism.

Including a large manual, it retails for £29.

By the way, Andor says they will be coming out with a more sophisticated unit by the beginning of 1985 that a spokesman says will be totally different from the Commtalk and designed for professional use (as well as the professional wallet).

Contact: Andor, 28 Hillside Drive, Rathfarnham, Dublin 14, Ireland. Tel: 0001 900 107.

MICRO COMMAND

Micro Command is not a speech synthesiser in the technical sense. It is a device which is taught to recognise the programmer's voice and then used to control the 64. In other words it is a voice recognition unit.

The Micro Command device plugs into the back of the 64 and operates with an accompanying cassette. This cassette contains eleven files; micro, logo, header, men, games, subrs, sheeptalk, symbols, teach, sheeptalk and symbols.

The first program, micro, is designed to introduce speech recognition. Micro Command has to be taught to recognise what the user's voice sounds like. "Up" and "down" are the first words it is taught. A little man will walk up and down a ladder on your command – if it has understood. It takes time for the recognition process and Orien have used game ideas to make this process more interesting.

In Sheeptalk, four words are used and the idea is to herd sheep into a pen by giving Rex, the sheepdog, commands.

After enough practise, speech recognition can be used in personal programs – an interesting challenge for programmers bored with games. Manuals accompany the device and include adequate programming instructions. Micro Command retails at £49.95.

Contact: Orien Data, 31/32 High Street, Dorset Gardens, Brighton. Tel: 0273 672291.

MAGIC VOICE

Magic Voice is a speech synthesiser utilising the text to spech process. It plugs into the cartridge port at the 64's rear and has its own cartridge port permitting other cartridges to be stacked on top. A manual is available.

The voice options are male, female or child. Female voices are rare in speech synthesis, but Commodore plan to use the device in Educational software and consider the children will respond better to a woman's voice.

The module contains enough data to say all 26 letters of the alphabet, as well as a vocabulary of 187 words. It can also repeat numbers and a diskette with extra vocabulary is planned.

Speech and music can be generated simultaneously and by using Commodore BASIC or machine code, voice and graphics can also be used at the same time.

Educational software have been planned and will include Talking Books and B J the Bear, a suite of programs on writing, thinking and arithmetic.

Magic Voice is still not available in this country, although a Commodore spokesman assured CCI that it would be soon. The price is to be decided, but will probably be in the region of £49.95.

Contact: Commodore (UK) Ltd, 1 Hunters Lane, Weldon, Corby, N Hants NN17 1QX. Tel: 0536 205555.

GALA-SPEECH

This is the only speech synthesiser which runs by software alone. It uses the allophone system and is available on cassette for £7.95 and disk for £10.95.

It has an ABC demonstration program with examples of allophones and general rules for their use.

Either machine code or BASIC can be utilised. If the programmer is using BASIC, the command 'say' is incorporated into the program together with the text that is desired.

The speech program is loaded first and followed by the preprogrammed software. The speech program does not interfere with the normal program because it occupies a high place in the memory.

Contact: Gala Soft, 116 Church Parade, Canvey Island, Essex. Tel: 0268 682719.

DUCKWORTH HOME COMPUTING

All books written by Peter Gerrard, former editor of *Commodore Computing International*, author of two top-selling games for the Commodore 64, or by Kevin Bergin. Both are regular contributors to *Personal Computer News, Which Micro?, Popular Computing Weekly* and *Commodore Horizons.*

SPRITES & SOUND ON THE COMMODORE 64
by Peter Gerrard

A complete guide to using the extraordinary features of the Commodore 64, together with a full working explanation of the chips that make it possible: the 6581 Sound Interface Device and the 6566 Video Interface Chip, together with the processor that make it all tick, the 6510.

Sections on programming your own musical instruments, producing sprite and programmable character animation, make this the guide for users of the Commodore 64 who want to get the most from the special features of their computer. *£6.95*

COMMODORE 64 GAMES by Kevin Bergin

This is a collection of 21 exciting programs specially written for the Commodore 64, including Golf, Snake, Air Attack, Draughts, Car Dodge, Tank Battle, and Minefield. An adventure game is also included as well as a program to enable you to devise your own version of Basic by re-defining keywords. Each program is accompanied by notes on its structure to enable you to modify or extend it. *£6.95*

THE COMPLETE 64 ROM DISASSEMBLY
by Peter Gerrard and Kevin Bergin

This book is for anyone who has ever wondered how the Commodore 64 really works. Intended for the serious programmer, it includes fundamental memory maps, memory architecture maps, the disassembly itself and (for reference) the complete machine code instruction set.

£5.95

EXPLORING ADVENTURES ON THE 64
by Peter Gerrard

The complete guide to computer adventure games: playing, writing and solving them. Starting with an introduction to adventures, and their early history, it takes you gently through the basic programming necessary on the 64 before you can start writing your own games. Inputting of information, room mapping, movement, vocabulary, and everything required to write an adventure game are explored in full detail. Then follow a number of adventure scenarios, and finally three complete listings, written specially for the 64. The games are available on one cassette at £7.95.

£6.95

USING THE COMODORE 64
by Peter Gerrard

A complete look at the latest home computer from Commodore Business machines. Starting with a refresher course in Basic Programming, it moves on through machine code, before considering in great detail sprites, graphics and sound. A section on peripherals, and then the heart of the book: an in-depth look at the chips that make it work, including the 6581 Sound Interface Device and the 6566 Video Controller Chip, as well as the heart of the computer, the 6510. The comprehensive appendices cover the full Basic and Machine Code Instruction sets, as well as several useful reference tables, and a complete machine code assembler/disassembler listing.

Personal Computer News said: "In this case, we are dealing with a gem of a book. It deserves a place on the bookshelves of every 64 user whether beginner or expert."

£9.95

Many other books and cassettes are available, write in for a catalogue.

DUCKWORTH, The Old Piano Factory, 43 Gloucester Crescent, London NW1 7DY. Tel: 01-485 3484

Real Music on Computer!

A NEW DIMENSION FOR THE COMMODORE 64

It is now possible, using a MIDI* based music keyboard to use the Commodore 64 with suitable hardware and software to create music of professional quality.

What is MIDI?

Quite simply MIDI (Musical Instrument Digital Interface) is a standard means of communication used by many of the leading instrument keyboard manufacturers, enabling an instrument of one make to 'talk to' another. In practice, using the JMS interface and suitable JMS software a whole new world opens up for the musically minded.

Do I have to be a keyboard player?

Obviously, it helps a great deal if you are! But if not – especially if you can 'Pick out a tune with one finger' you can have enormous fun with the Composer and Studio programs.

What do I need?

A Midi Keyboard with amplifier (there is a wide choice from several manufacturers).
A Midi Interface RMS-2H • RMS Software • A Commodore 64 and 1541 disk drive (or CX 64) • Connecting leads

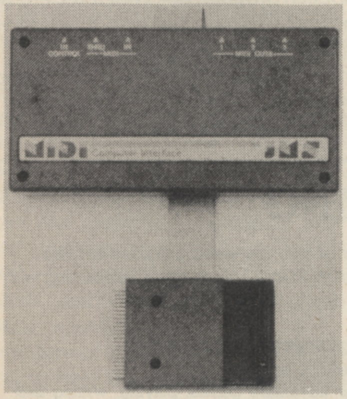
What can I do with it?

In a word – plenty! Depending on which software you choose you can compose, playback, even use your computer as a 12 Track Recording Studio using facilities unheard of even in sophisticated recording studios.

Where can I buy these?

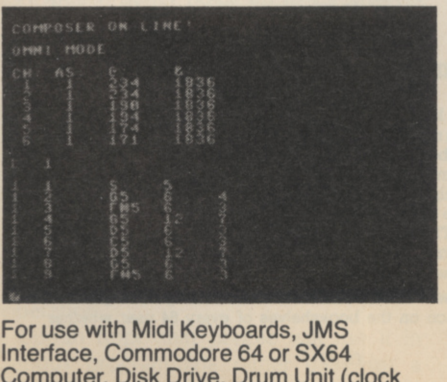
Any good musical instrument shop can supply the software, hardware, and MIDI keyboards. In case of difficulty contact Rosetti.

RMS24 MIDI INTERFACE



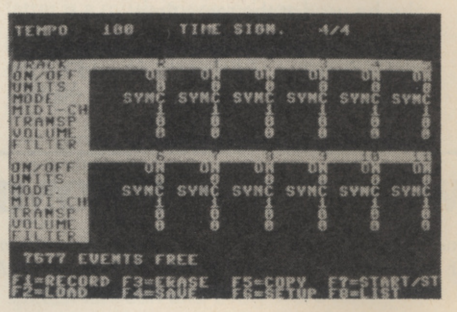
Midi interface for Commodore 64 and Sinclair Spectrum 48k computers. 3 Midi outputs, midi in, midi thru and control in.

RMS20C MULTITRACK COMPOSER



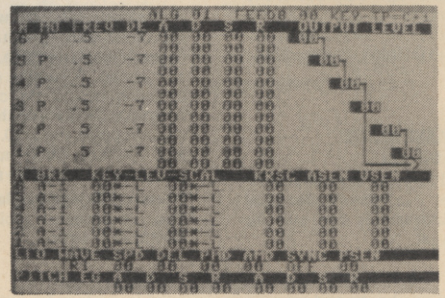
For use with Midi Keyboards, JMS Interface, Commodore 64 or SX64 Computer, Disk Drive, Drum Unit (clock pulse 24). (If using drum unit RMS-5H cable required).
Step time input from computer. Six voice channels. Each voice channel assignable to a Midi channel. Over 1500 steps per channel. Tempo changes without pitch changes. Sound changes can be made in any voice at any point. Supplied with demo/storage disk. Retains Midi key velocity data.

RMS24C RECORDING STUDIO



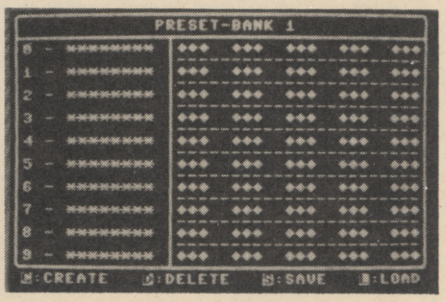
The 12 Track Recording Studio can actually improve on a conventional recording machine.
Tempo change without any change of pitch. A total change of any sound after the recording. Transposition of any sound after recording. Listing and editing of any measure in any channel.

RMS21C SOUND EDITOR



For use with Yamaha Dx7 or Dx9 Synthesiser, JMS Interface, Commodore 64 or SX64 Computer, Disk Drive and Printer (optional).
Displays all sound parameters together on screen. Edit on keyboard and screen parameters change. Print out facility from screen. Store new sounds on floppy disk. Simplifies editing.

RMS25C MASTER KEYBOARD



The Master Keyboard program permits fast control of a series of connected Keyboards. It has the following facilities.
Sounds can be drawn from any connected Midi Keyboard and set into a designated area on the master keyboard. A series of Midi based keyboards and devices can be pre-set to up to 80 variations, enabling the player to reset the entire range of keyboard sounds on stage between numbers. A simulated "drawbar" facility can be used to add harmonies to designated areas of the master keyboard. Pitch variation.

Distributed Worldwide by

Rosetti Limited
138-140 Old Street, London EC1V 9BL
Telephone 01-253 7294

Germany

Jellinghans Musik Center
Dortmund
Telephone 49-231-171921

USA

Cherry Lane Music Co.

Telephone 0101-203-661-0707

Australia

Dynamic Music
Brookvale, New South Wales
Telephone (02) 939-1299

Spain

Ventamatic
Barcelona
Telephone (93) 230-9790

Musical Connections

As computers take on a more important role in the music world, Sue Pearce explains the concept of MIDI (Musical Instrument Digital Interface) and talks to well-known musicians about their use of computers.

No article about the growing use of computers in music would be complete without a mention of MIDI (Musical Instrument Digital Interface). MIDI is an interface specification enabling easy and inexpensive interconnection of digital equipment such as synthesisers, sequencers and computers.

Before MIDI, older analogue synthesisers used a system of 1 volt per octave. What they had on the back was a CV (control voltage) gate. The gate being either on or off. You needed four strands of wire for each note. Two notes required eight strands of wire, and so on. You can imagine the spaghetti effect of all that wire.

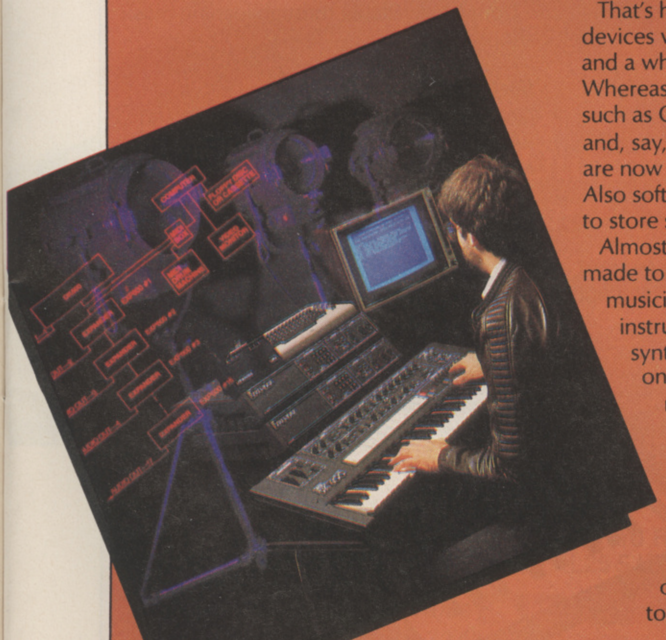
These synthesisers were only compatible on 1v systems. Another problem was voltage control. DCO's (digital control octaves) were stable, but didn't control voltage.

There came a stage in the development of synthesisers where manufacturers were using micro processors more and more in production. Musical instruments are of a nature where you may want to use them together with other instruments. Like a computer, the synthesiser has peripherals – synthesisers have sequencers.

Some manufacturers instruments worked with others, some did not. Before things went too far, the manufacturers decided to get together and devise a standard. After all, all were using similar technology for keyboards, so why not make them all the same?

After much discussion, MIDI (Musical Instrument Digital Interface) was born. All the information passes along one wire. Each piece of information takes a very short amount of time to travel – just 320 microseconds. So short that it is not registered by the human ear. The line is then clear for another message.

The hardware used is a 5-pin Din (although only two pins are actually used). It's a very common and cheap device unlike something such as a centronics plug.



That's how it all began. Now there are devices which interface with computers and a whole new industry is emerging. Whereas in the past you had companies such as Commodore making computers and, say, Roland making keyboards, there are now third parties making interfaces. Also software houses are writing programs to store sound on the computer.

Almost all musical instruments are now made to meet MIDI specifications. Many musicians and groups link their instruments, so, for example, two synthesisers can be played from just one keyboard. Or a drummer can now even be replaced by a drum machine. Now, in addition to the numerous sound packages available to create music on the 64 (see this month's product survey), there is vast scope for the home computer owner to link musical instruments to computers such as the 64.

Manufacturers have not been slow to recognise this potential market. Siel, for example, feels that its future lies within the compatibility of electronic keyboards and computers. Their aim is to bring music to computer owners and computers to synthesiser owners.

A series of keyboards is being introduced by Siel aimed at the home, education and computer markets. And Siel's MIDI Computer Interface allows connection to computers using CPUs Z80, 6502 and 6510. Any MIDI equipped instrument may be interfaced directly to a computer for musical control.

This range is being backed up with a range of computer software. For example, a Composer/Arranger program for the 64 which is a six track pulse time sequencer. Each track is inputted monophonically via the Qwerty keyboard in terms of step number, note name and octave, note duration and gate time. The program's flexibility allows full stacatto and legato in Omni and Poly MIDI modes.

SOUND

While Siel are making a definite attempt to cater for this new market, the availability of MIDI interfaces means that instruments from most manufacturers such as Roland and Yamaha can be linked to your computer. Admittedly it can be an expensive affair, but computer enthusiasts with a bent for music will be more than pleased with the result. (If your budget is limited you should enter this month's music competition, the prize being Casio's MT200 keyboard plus the PA-1 interface — all you need to set you on your way!)

There are music shops and centres all over the country whose staff are trained to advise customers on a suitable purchase for their price range and requirements. Some of these are listed in this feature along with a list of some of the many manufacturers and instruments that can be interfaced with a computer.

If you are interested in interfacing instruments with your computer and would like to research a little deeper into the concept, there is a MIDI Users Group at 8426 Vine Valley D.R. Sun Valley, CA91352, USA.

SIEL
MK 900

SIEL
DK 600: MIDI 6 Voice Programmable Polyphonic Synthesiser
Price: £999
MK 900: MIDI Keyboard
Price: £449
MIDI Computer Interface
Price: £99
Siel Software for the 64:
Composer/arranger program — disk £39, cassette £36
16 track Live Sequencer — disk £69.50, cassette £64

Coming Soon:
Expander Editor
Synthesiser Database plus programs
Contact: Siel (UK) Ltd, AHED Depot, Reigate Road, Hookwood, Horley, Surrey. Tel: 02934 76153.

JMS
RMS-20c: MIDI Multitrack Composer
Price: £49.95
RMS-23c: MIDI Arpeggiator Program
Price: £19.95
RMS-25c: MIDI Master Keyboard
Price: £99.95
MIDI Recording Studio
Price: £99.95
Contact: Rosetti Ltd, 138-140 Old Street, London EC1. Tel: 01-253 7294.

MPC ELECTRONICS
Music Percussion Computer
Price: £595
Contact: MPC Electronics, The Gables, Willingham, Cambridge. Tel: 0954 60264.

ROLAND
Juno 106 — Analogue synthesiser
Price: £800
Contact: Roland, Unit 6, Great West Trading Estate, 983 Great West Road, Brentford, Middx. Tel: 01-568 4578.

SEQUENTIAL CIRCUITS
Model 64: MIDI Sequencer
Price: £185
Six-Trak: Multi-trimbral Polyphonic Synthesiser
Price: £800
Contact: Available through leading music shops.

MICRO MUSICAL
(Software for use with Casio MT-200 and PA-1 Interface)
Microlink System ML-11: Editor/interface
Price: £29.95
Microlink System ML-13: Interface
Price: £19.95

AUTOGRAPHICS
Microsound 64: Full-size, 4 octave Keyboard
Price: £145 (plus £3 p&p)
Contact: Autographics Ltd, 3a Reading Road, Henley-on-Thames, Oxon. Tel: 0491 575 469.

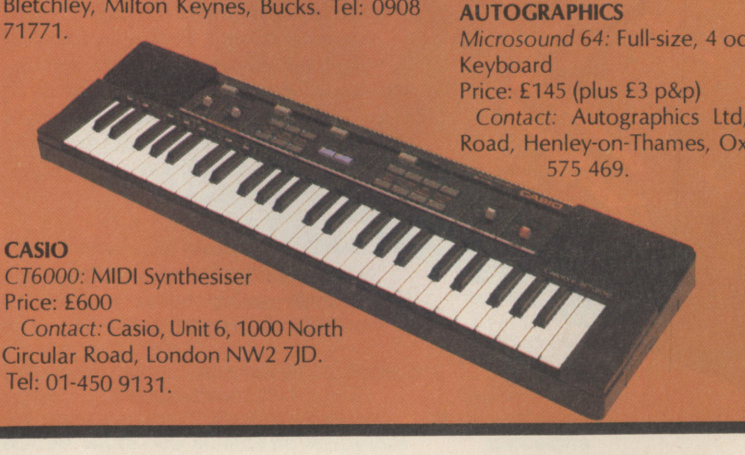
KORG
POLY-800

KORG
Poly-800

KORG
Poly-61M: MIDI 6 Voice Programmable Digital Synth, 64 Program.
Price: £849
Poly-800: MIDI Programmable 8 Voice Digital Synth
Price: £575
EX-800: MIDI Programmable 8 Voice Synth Module
Price: £425
RK-100: Remote MIDI Keyboard
Price: £499
DDM-110: Programmable Digital Drum Machine
Price: £229
DDM-220: Programmable Digital Percussion
Price: £229
Contact: Rose Morris Ltd, 32-34 Gordon House Road, London NW5. Tel: 01-267 5151.

YAMAHA
DX-7: Digital Algorythm Synthesiser
Price: £1399
Contact: Yamaha, Mount Avenue, Bletchley, Milton Keynes, Bucks. Tel: 0908 71771.

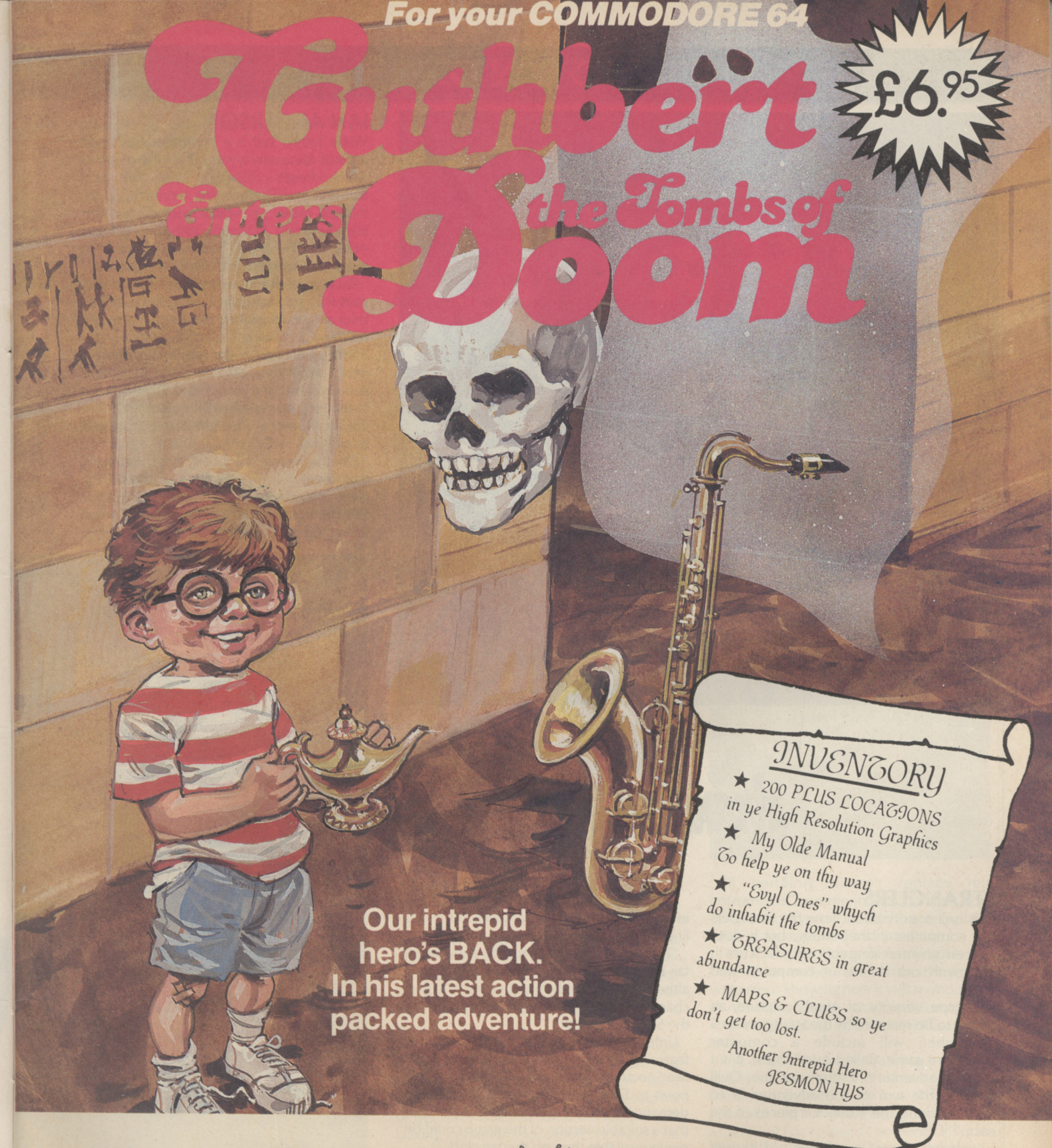
CASIO
CT6000: MIDI Synthesiser
Price: £600
Contact: Casio, Unit 6, 1000 North Circular Road, London NW2 7JD.
Tel: 01-450 9131.



CASIO
MT200

For your COMMODORE 64

Cuthbert Enters the Tombs of Doom



Our intrepid hero's BACK. In his latest action packed adventure!

INVENTORY
- ★ 200 PLUS LOCATIONS in ye High Resolution Graphics
- ★ My Olde Manual To help ye on thy way
- ★ "Evyl Ones" whych do inhabit the tombs
- ★ TREASURES in great abundance
- ★ MAPS & CLUES so ye don't get too lost.

Another Intrepid Hero
JESMON HYS

Mail Order Sales from
Microdeal Mail Order 41 Truro Rd,
St. Austell Cornwall PL25 5JE

Credit Card Sales
Phone 0726 73456

Dealers Contact
MICRODEAL DISTRIBUTION
0726-73456
or WEBSTERS SOFTWARE
0483 62222

MICRODEAL

Selected Microdeal Titles available from computer dealers nationwide or from larger branches of

John Menzies Stores and Boots

the stranglers

STRANGLERS

This isn't a story about how the Stranglers use computers in their music, but it does concern an interesting concept which ties in well with our theme of computers and music.

All tape versions of Aural Sculpture, an album to be released by the Stranglers on 5 November, will include a computer adventure game. Called Aural Quest, it is a lengthy adventure written on the Quill system. The aim of the adventure is to search around the world for pieces of the ear.

Keyboard player Dave Greenfield, himself a keen adventure player, says: "Nobody has put an adventure game onto a musical release before. Initially the idea was formed within the band and it was designed by Mike Turner of Star Dreams."

Throughout the game clues are provided in the form of burst of Strangler's music and lines from the band's songs.

"The player doesn't have to be a Stranglers fan to complete the adventure," says Dave, although presumably most people who purchase the album will already be familiar with the Stranglers music.

Unfortunately, the version of Aural Quest featuring on the album is only suitable for the Spectrum. However while berating this point to Dave, he did suggest that should demand for a 64 version exist it is possible that a suitable version of the game could be made available through the fan club.

So if you are interested it's up to you to generate that demand. The address to write to is Stranglers Information Service, PO Box 32, Shepperton Studio Centre, Studios Road, Shepperton Road, Middlesex.

IAN ANDERSON

While Jethro Tull is a band that has been around for many years, it is also a band which keeps close tabs on all new technology. During the recent 'Under Wraps' tour I went along to the Hammersmith Odeon to talk to Ian Anderson (who for many IS Jethro Tull) about the band's use of computers in music.

Backstage, the interview got off to a bad start with Ian launching into the story of his brief and disappointing experience with the 64.

"I bought one for the kids at Christmas," recalls Ian. "I also spent £100 on educational software. Nothing would load. I took it back to the shop and eventually replaced it with a BBC computer – the last one I thought I would buy."

On the home computer front, Ian feels that using a computer such as the 64 for music purposes is purely hobbyist. He says: "The home-user with a computer might find it fun to play around with music, but it strikes

me as being hobby orientated and low in terms of output.

"There are a number of music programs that hve been utilised with the 64," continues Ian. "But my own opinion is that if you are talking about music in any serious application, with any control, you are down to spending money.

"I don't really believe in the future of any home computer systems for the home user who also happens to be a musician, other than rudimentary assistance.

"It needs a dedicated system. It isn't like playing Pac-Man — you can't play games with a 24 multi-track, but it's a useful tool for professionality.

Returning to Jethro Tull's use of computers, Ian explains that each of the keyboards on stage feature a number of micro processors.

"Looking at the level of dedicated computer technology in something like the Roland Sequencer — they are all simple computers in that its limitations are in terms of the way it is programmed.

"When you get into the serious stuff such as the Fairlight or Sinclavier, which use Winchester disk drives, you are talking about computers that have far more capability — really industrial machines."

They also cost more at between £20-30,000!

At this point in the interview, Peter-John Vettese took over to elaborate on the band's use of computers on stage.

PETER-JOHN VETTESE

As the keyboard player, Peter-John Vettese was nominated as the most logical person to explain how Jethro Tull are using computer technology as a stage medium.

Peter immediately reeled off a long list of instruments which are MIDI'd together including Yamaha and Oberheim keyboards, expanders, emulators, sequencers and vocoders!

"The computer revolution has taken place," comments Peter. "Things changed when digital sound came about. For example, when the Yamaha DX7 was launched it was entirely digital and used frequency modulation as the sound source.

"The advantage is programmability" he continues. "You can store a program and switch instantly from program to program. Then there's MIDI which enables you to multi-layer, which you can't do with gates and CV's."

Peter explains that the Fairlight and Sinclavier synthesisers use a computer terminal and disk drive and therefore are, in effect, computer music studios.

Jethro Tull also make use of drum machines. When the last album, Walk Into Light, was recorded the group had not yet discovered the drumming talents of Don Perry. Peter recalls: "Ian and I used the Linn drum on the last album. On stage it is replaced by the fantastic playing of Don Perry!

"The advantage of a drum machine is that the writer of a song is allowed to program what he thinks the drums should be doing. On the other hand, the disadvantage is that the creative element of another brain is missing."

Does the use of computers in music take away some of the natural creativity of musicians? Peter believes that the most natural instrument for a human to use is his or her voice and that some synthesisers are lacking in human expression. However, he says: "The ones I play have as much if not more expression than any other conventional instrument. They can only be that way because of computers. Velocity, volume — the whole thing is monitored by computers.

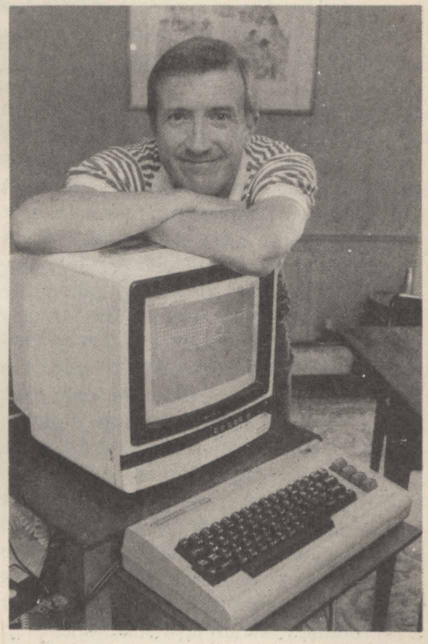
"I can be as emotional and expressive in my music as anybody can. And that is only because there are computers."

ROY CASTLE

Whenever I think of Roy Castle, I think back to his TV series 'Record Breakers' and in particular to one program in which Roy attempted to play a record breaking number of instruments — and make music from objects that are far from being instruments in the true sense. It isn't everyone who can play a tune on a teapot!

So when we heard that Roy was now the proud owner of a 64 we couldn't wait to find out just what he was doing with it. Transforming it into a wind instrument? Or maybe using it for percussion?

Nothing that dramatic as it turned out, but Roy does find the 64 invaluable in writing music.



"It certainly doesn't replace real instruments," comments Roy. "What it does do is to allow you to very deliberately plan a musical arrangement and listen to it.

"It's a very good way of learning how to listen to an orchestration without trying to write it not knowing how it will sound. After all not many people can afford to employ a whole orchestra to listen to how it is coming on."

Roy originally bought the 64 to enable his children to have access to "what is obviously the thing of the future". He says: "I'm not very good at it yet. In programming terms I'm still a baby, but I do realise its potential. It's quite difficult," he continues. "It's like learning a new language, but once you've mastered the technique...

"I would never want to eliminate real instruments because of the personal attitude and live music," continues Roy. "But it's obviously the thing of the future. Soon the whole world will be computerised."

Musical interrupts

One of the common features shared by a number of popular arcade games at the moment (Frantic Freddie is a prime example) is that of musical interrupts. In other words, while the program is getting one with doing one thing, a tune miraculously carries on in the background. Pete Gerrard explains, with the aid of a mixture of Basic and machine code, how it's done.

Since this whole thing is based on interrupts, there's obviously got to be something somewhere in the 64 that is capable of being interrupted. A glance at one of the many memory maps available for the machine shows that at locations 788 and 789 decimal (or $0314 and $0315 hexadecimal), there is something called the hardware interrupt vector. This usually contains the numbers 49 and 234 respectively in the two locations, or $31 and $EA in hexadecimal. This tells the 64 that, everytime this routine is checked, program flow must go to location $EA31, reading the numbers in low-high order as usual.

As this routine is checked with great frequency, we can alter this (it is only RAM after all) to jump to a routine of our own. The main thing to remember is, having made this change, to ensure that at some point in our own routine program flow still branches to that routine at $EA31, which updates the clock, amongst other things, and generally helps keep the 64 ticking over. If this call wasn't present, it would be a very sick 64 indeed, and your musical career would die at birth.

Re-routing interrupts

So the first thing to do is alter the content of those two locations, which is really the only purpose of the first and third blocks of machine code. Set interrupt disable (in other words, we don't want to be disturbed), load the accumulator with $50 and store it at location $0314, load the accumulator with $C0 and store that at location $0315, clear interrupt disable (in other words, carry on interrupting), do nothing for a bit and return from this subroutine.

The last part of the routine sets everything back to normal.

What have we achieved by doing this? Well, program flow from the hardware interrupt vector no longer goes off to location $EA31 directly, it now goes there via location $C050 instead. This is set up by typing in SYS49152, and everything is returned to normal by typing SYS49171. However, since we haven't got any code at location $C050, there's not a lot of point in typing this just yet.

Getting Going

Without an assembler, typing all this in is going to be tricky from the machine code listings, and so the data program has been included as well. This is in fact longer than the machine code equivalent, since the listings only show the relevant parts of the machine code, not the gaps in between. But, if you haven't got an assembler you'll just have to resign yourself to doing a bit more typing.

The last two blocks of machine code (the hexadecimal dumps) are the actual tune that is going to be played: in this case, a simple boogie riff, since my musical talent is minimal. Again, these can be typed in either with an assembler, or you'll hve to do it the long way and enter all the data.

The final bit of typing is the Basic program headed Musical Interrupts. Straightforward, since it's all in Basic. The only line needing an explanation at the moment, in order that you can get it working before we dive into the great explanation of how it all does what it does, is line 5. This checks a memory location where part of the machine code lies, and if that location doesn't contain a 65, then we load the program 'boogietime' from disk. If you're using a tape system, change that eight to a one. 'Boogietime' is just the name I gave to the whole of the machine code collection of routines.

If you have got it all typed in, just run the Basic program as a normal Basic program, and sit back and listen to the music. Now, the great question, how does it all work?

Basic program explanation

Taking this line by line, we have:

Line 3: Set the border and background colours, revert to an upper case/lower case display, and print up a title.

Line 5: See if the machine code is in place, and if it isn't load it in.

Line 10: See the variable S to equal the start of the SID chip, and set the low order pulse frequency for voice 3 to be maximum, give it an attack/decay setting of 142 and a sustain/release setting of 150.

Line 20: Turn the volume up to maximum, and POKE some values which the machine code program will later use.

Line 30: More values for the machine code program.

Line 100-120: Do the same for voice 2 before activating the routine with a call of SYS49152.

Lines 130-   : Just a little demo to prove that you can carry on doing things while the tune is playing.

Machine Code explanation

We'll just concentrate on the routine for voice 3 (which lies from locations $C050 to $C0AF), as the one for voice 2 is virtually identical.

First of all, check the content of location $C042 (49218), and if it contains a zero then carry on with the program. If not, jump to the internal routine at $EA31 and carry on as normal.

Decrease the content of location $C041 (49217) and if that isn't equal to zero, branch back to $C058 and off to $EA31 again.

Load the accumulator with the content of location $C040 and store it at $C041. These are all the locations that our earlier Basic program poked when it was setting everything up.

Now the next lot of instructions, concerning locations $FB, $FC and so on, requires a bit of discussion. The locations used (and the ones in block four of the machine code as well) form part of what is referred to as page zero of the 64's memory map, and it so happens that these locations don't do very much, we can use them ourselves to store numbers in. The Basic program earlier poked some values into these locations, 178 and 192 for locations $FB and $FC respectively, which form, when linked together, the hexadecimal number $COB2 (since 178 is $B2 in hexadecimal, 192 is $C0, and we reverse the order of the numbers as usual).

What the rest of this machine code program is doing, is to load the accumulator with the value to be found in locations $C020 onwards, and store that value in the locations that form the high and low order frequencies for the note to be played by voice 3.

Complicated eh? This 'offset' machine code instruction is not one of the easiest in the world to understand, and many competent machine code programmers will probably never use it, which is a shame, since it makes this type of program so much easier to write. Without using it, the code needed here would be about five times as long as is necessary.

The latter part of the program turns the waveform off and on again (as should always be done before playing a note, otherwise you'll usually just get silence), jumps off to the other routine to play the next note for voice 2, before finally setting everything back to normal and going back to start all over again.

The end of a tune is indicated by a value $FF, or decimal 255, being read, so just make sure that none of your musical notes contain this value.

By altering what is stored in locations $C0B2 and $C8B2 onwards, you can change the tune that is being played, and since this code is well spaced out there is room to have something like 900 notes in each tune before running out of space, which should be enough to keep most people happy.

Conclusion

You'll probably only really understand what's going on by typing everything in, getting it running, and then experimenting with it to see what happens. Do make sure that you save copies of everything to tape or disk before attempting to run it, because a simple error in entering the code can so easily cause the machine to crash.

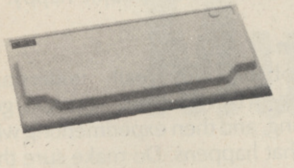
By changing the ADSR settings for the voices, perhaps experimenting with different wave forms, different pulse widths, and so on, you should be able to produce some excellent background music for your programs. Voice one is still available to perform as normal, so you can still have various sound effects being played as well as the tune.

Have fun!

```
BASIC INTERRUPT PART ONE

10 FORI=0TO71:READA:B=B+A:POKE49152+I.A:NEXT
12 IFB<>11101THENPRINT"ERROR IN BLOCK #0":STOP
20 FORI=72TO143:READA:C=C+A:POKE49152+I.A:NEXT
22 IFC<>11286THENPRINT"ERROR IN BLOCK #1":STOP
30 FORI=144TO175:READA:D=D+A:POKE49152+I.A:NEXT
32 IFD<>4866THENPRINT"ERROR IN BLOCK #2":STOP
34 PRINT"PART ONE OF DATA ENTERED CORRECTLY AND  N
OW IN PLACE.":END
30000 REM BLOCK # 0
30001 DATA234.234.234.120.169.80.141.20
30002 DATA3.169.192.141.21.3.88.234
30003 DATA234.96.120.169.49.141.20.3
30004 DATA169.234.141,21.3.88.234.96
30005 DATA234.222.222.222.222.222.222.222
30006 DATA222.222,222.222,222.222.222.222
30007 DATA222.222.222.222.222.222.222.222
30008 DATA222,222,222,222.222.222.222.222
30009 DATA10.9.0.65.0.0.0.0
30010 REM BLOCK # 1
30011 DATA0.0.0.65.0.0.0.0
30012 DATA234,234,234.173,66.192.240.4
30013 DATA76.49.234.234.206.65.192.208
30014 DATA247,234,234,234.173.64.192.141
30015 DATA65.192.234.230.251.208.2.230
30016 DATA252,234.160.0,177,251,201.255
30017 DATA240.40.234.234.234.234.160.0
30018 DATA141,15,212,230.251.208,2.230
30019 DATA252.234.177.251.141.14.212.173
30020 REM BLOCK # 2
30021 DATA67.192.72.169.0.141.18.212
30022 DATA104,141,18,212,234,234.76.100
30023 DATA200.234.234.234.165.253.133.251
30024 DATA165,254,133,252,76.100.192.0
```

A SUPERB HARD COVER
for your COMMODORE 64 & VIC 20



- Engineered in top quality high impact ABS — very touch
- Super textured finish in cream
- Static resistant
- Looks good in the home
- Gives excellent protection
- Ideal for schools and colleges

£9.95
(+ £1.00 p&p)

TOP QUALITY MONITOR STAND

A high quality steel stand designed to combine a pleasing appearance with high rigidity. It bridges the '64' Micro and can be used with our hard cover. It has solid rubber feet and has a durable stove enamelled textured finish in cream. Platform dims. 455mm x 260mm. Overall height 105mm. Price: £17.95(+ £2.00 Post & Packing).

Please send me

☐ covers ☐ Stands

I enclose a cheque/P.O. for £ ....

Name ....

Address ....

....

.... Code ....

send to:

Tekform
Grange Close
Sandbach
Ches. CW11 9ET
Tel: (09367) 3098

Tekform

COMMODORE 64
16 & Plus/4
PRINTER INTERFACE
with full
COMMODORE GRAPHICS

- ALL Commodore graphics on ANY standard parallel printer.
- Fully intelligent self-contained microprocessor controlled interface.
- Works with all software and uses no memory.
- Easily installed — fit & forget.
- No extra power supply needed.
- Plugs into serial port leaving cartridge port free.
- Full dot and tabbing facility.
- Built-in status-self test report.

order MW350 £89.95 inc VAT

If you don't need the unique Commodore graphics set then this is your interface. *NO* power supply needed ... *NO* printer modifications ... *NO* software to load ... Leaves cartridge and user port free.

order MW302C £66.95 inc VAT

EXPANSION UNIT

- 3 slot switched motherboard.
- Made from top quality military grade fibreglass circuit board.
- All 3 slots fully switchable.

only £18.95 inc VAT

ROM EXPANSION UNIT

- Fully cased
- Accepts 2732 or compatible masked ROM.
- Full technical details included.

only £15.95 inc VAT

80 COLUMN SCREEN EXPANDER

- Takes over video display.
- Expands screen to 80 columns.
- Takes either 4k 2732 or 8k 2764 EPROMS.
- Full technical details included with each cartridge.

only £49.95 inc VAT

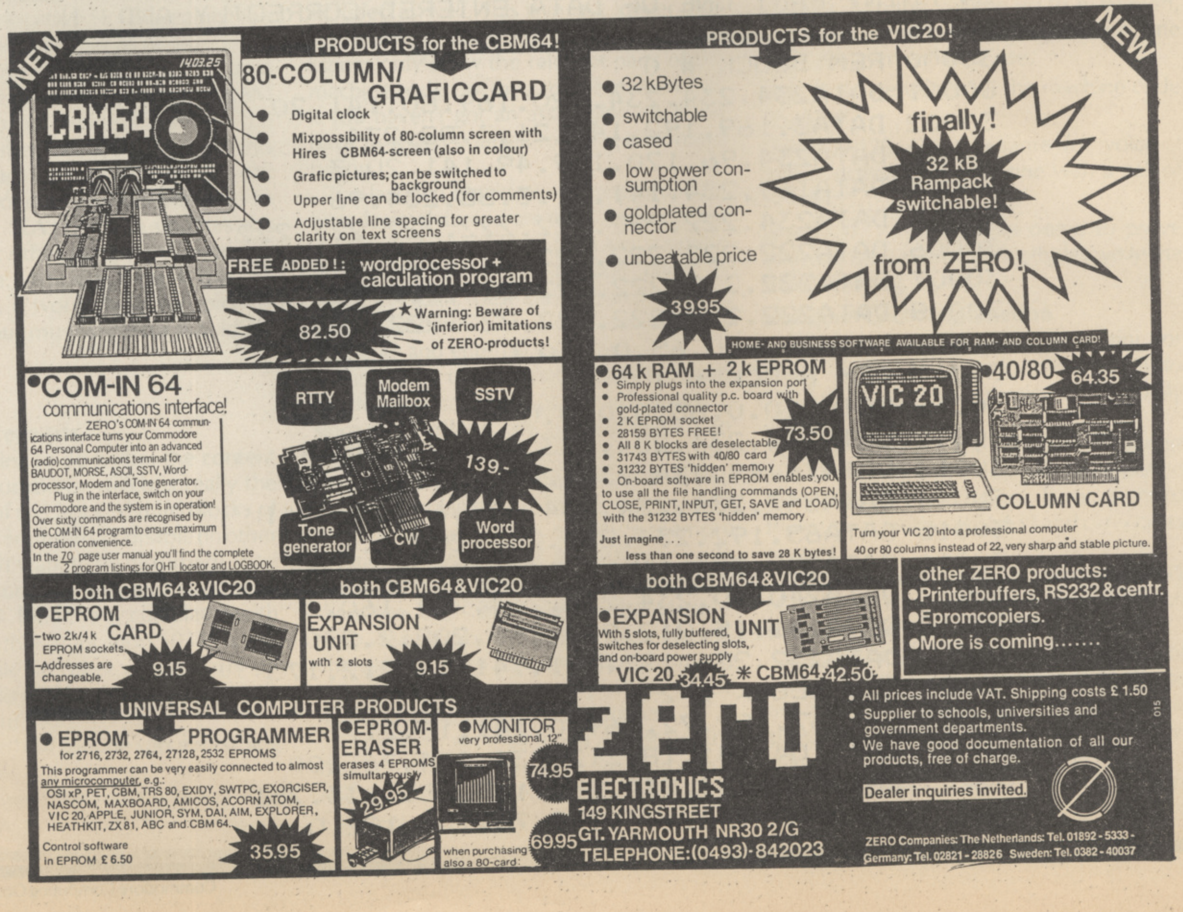
V.I.P. SMART TERMINAL
MODEM CONTROL PROGRAM

A key to the world of communications
• Communicate with any host or micro with RS232 capabilities • 80 column display ... 20 programmable keys
• 16 entry auto dial telephone directory
• Built-in alarm clock and terminal emulator • Sends and receives in ML or BASIC • BAUD rate from 50 to 2400.

all this for only £49.95 inc VAT

All prices include VAT, Post and Packing. Dealer enquiries welcome. Ring 01-900 0999 quoting your ACCESS or VISA card now — or send your order to *IMPEX SOFTWARE LTD.*

Metro House, Second Way, Wembley, Middlesex HA9 0TY.



PRODUCTS for the CBM64!

80-COLUMN/ GRAFICCARD

- Digital clock
- Mixpossibility of 80-column screen with Hires CBM64-screen (also in colour)
- Grafic pictures; can be switched to background
- Upper line can be locked (for comments)
- Adjustable line spacing for greater clarity on text screens

FREE ADDED!: wordprocessor + calculation program

82.50

★ Warning: Beware of (inferior) imitations of ZERO-products!

PRODUCTS for the VIC20!

- 32 kBytes
- switchable
- cased
- low power consumption
- goldplated connector
- unbeatable price

39.95

finally! 32 kB Rampack switchable! from ZERO!

HOME- AND BUSINESS SOFTWARE AVAILABLE FOR RAM- AND COLUMN CARD!

•COM-IN 64
communications interface!

ZERO's COM-IN 64 communications interface turns your Commodore 64 Personal Computer into an advanced (radio)communications terminal for BAUDOT, MORSE, ASCII, SSTV, Wordprocessor, Modem and Tone generator.

Plug in the interface, switch on your Commodore and the system is in operation! Over sixty commands are recognised by the COM-IN 64 program to ensure maximum operation convenience.

In the 70 page user manual you'll find the complete 2 program listings for QHT locator and LOGBOOK.

RTTY
Modem Mailbox
SSTV
Tone generator
CW
Word processor

139.-

•64 k RAM + 2 k EPROM

- Simply plugs into the expansion port
- Professional quality p.c. board with gold-plated connector
- 2 K EPROM socket
- 28159 BYTES FREE!
- All 8 K blocks are deselectable
- 31743 BYTES with 40/80 card
- 31232 BYTES 'hidden' memory
- On-board software in EPROM enables you to use all the file handling commands (OPEN, CLOSE, PRINT, INPUT, GET, SAVE and LOAD) with the 31232 BYTES 'hidden' memory

73.50

Just imagine...
less than one second to save 28 K bytes!

•40/80 COLUMN CARD

64.35

Turn your VIC 20 into a professional computer
40 or 80 columns instead of 22, very sharp and stable picture.

both CBM64&VIC20

•EPROM CARD
–two 2k/4 k EPROM sockets.
–Addresses are changeable.

9.15

both CBM64&VIC20

•EXPANSION UNIT
with 2 slots

9.15

both CBM64&VIC20

•EXPANSION UNIT
With 5 slots, fully buffered, switches for deselecting slots, and on-board power supply

VIC 20 34.45 ✻ CBM64 42.50

other ZERO products:
- Printerbuffers, RS232 & centr.
- Epromcopiers.
- More is coming.......

UNIVERSAL COMPUTER PRODUCTS

• EPROM PROGRAMMER
for 2716, 2732, 2764, 27128, 2532 EPROMS
This programmer can be very easily connected to almost any microcomputer, e.g.:
OSI xP, PET, CBM, TRS 80, EXIDY, SWTPC, EXORCISER, NASCOM, MAXBOARD, AMICOS, ACORN ATOM, VIC 20, APPLE, JUNIOR, SYM, DAI, AIM, EXPLORER, HEATHKIT, ZX 81, ABC and CBM 64.
Control software in EPROM £ 6.50

35.95

•EPROM-ERASER
erases 4 EPROMS simultaneously

29.95

•MONITOR
very professional, 12"

74.95

when purchasing also a 80-card:

69.95

zero
ELECTRONICS
149 KINGSTREET
GT. YARMOUTH NR30 2/G
TELEPHONE:(0493)-842023

- All prices include VAT. Shipping costs £ 1.50
- Supplier to schools, universities and government departments.
- We have good documentation of all our products, free of charge.

Dealer inquiries invited.

ZERO Companies: The Netherlands: Tel. 01892 - 5333 - Germany: Tel. 02821 - 28826 Sweden: Tel. 0382 - 40037

015

BASIC INTERRUPT PART TWO

```
10 FORI=0TO71:READA:B=B+A:POKE51200+I.A:NEXT
12 IFB<>11110THENPRINT"ERROR IN BLOCK #0":STOP
20 FORI=72TO143:READA:C=C+A:POKE51200+I.A:NEXT
22 IFC<>11280THENPRINT"ERROR IN BLOCK #1":STOP
30 FORI=144TO175:READA:D=D+A:POKE51200+I.A:NEXT
32 IFD<>4835THENPRINT"ERROR IN BLOCK #2":STOP
40 PRINT"PART TWO OF DATA ENTERED CORRECTLY AND  N
OW IN PLACE.":END
30000 REM BLOCK # 0
30001 DATA234.234.234.120.169.80.141.20
30002 DATA3,169,200,141,21,3.88.234
30003 DATA234.96.120.169.49.141.20.3
30004 DATA169,234,141,21,3,88,234.96
30005 DATA234.222,222.222.222.222.222.222
30006 DATA222,222,222,222,222,222,222.222
30007 DATA222.222.222.222.222.222.222.222
30008 DATA222,222,222,222,222.222.222.222
30009 DATA10.10.0.65.0.0.0.0
30010 REM BLOCK # 1
30011 DATA0.0.0.65.0.0.0.0
30012 DATA234.234,234,173.66.200.240.4
30013 DATA76.49.234.234.206.65.200.208
30014 DATA247.234,234,234,173.64.200.141
30015 DATA65.200.234.230.247.208.2.230
30016 DATA248.234.160.0.177.247.201.255
30017 DATA240.40.234.234.234.234.160.0
30018 DATA141,8,212,230,247,208,2.230
30019 DATA248.234.177.247.141.7.212.173
30020 REM BLOCK # 2
30021 DATA67.200.72.169.0.141.11.212
30022 DATA104,141,11,212,234,234.76.49
30023 DATA234.234.234.234.165.249.133.247
30024 DATA165,250,133,248,76.100.200.0
READY.
```

TUNE IN BASIC

```
10 FORI=0TO80:READA:B=B+A:POKE49331+I.A:NEXT
12 IFB<>2543THENPRINT"DATA ERROR IN BLOCK #0":STOP
20 B=0:FORI=0TO80:READA:B=B+A:POKE51379+I.A:NEXT
22 IFB<>4541THENPRINT"DATA ERROR IN BLOCK #2":STOP
24 PRINT"DATA ENTERED CORRECTLY AND CODE NOW IN  P
LACE."
30000 REM BLOCK # 0
30001 DATA4,73.0,0,4.73.0.0
30002 DATA4.73.0.0.4.73.0.0
30003 DATA4,73,0,0,4,73,0.0
30004 DATA4.73.0.0,4,73.0.0
```

SPECIAL OFFER FREE LIGHTPEN

FREE LIGHTPEN WITH EVERY GRAPHKIT PACKAGE IF YOU USE THIS COUPON NOW

Yes a free lightpen! With every **GRAPHKIT!** Graphkit is the ultimate in drawing!, designing! or painting! (using the lightpen of course, which incidently has a full 3 year warranty!) Graphkit will amongst other things allow you to:

- ★ Draw free handed on the screen anything from a Micky Mouse to your latest integrated circuit! with all fill colour and erase facilities of course!
- ★ Save/load your latest masterpiece to/from the disk/tape drive
- ★ Or directly copy the drawing on the screen to the printer! and keep it for ever or send to a friend as a post card!
- ★ Design your own colourful sprites and characters
- ★ Play the games in the package! or use the lightpen in your own games/education/business programs

GRAPHKIT is available on disk and tape, tape version is £15.95 and disk version (recommended) is £19.95.

All you 1540/1541 disk users **DMON!** is here at last. DMON is the disk monitor you have been waiting for it will allow you to:

- ★ Read/write blocks from/to the disk
- ★ Display and edit blocks on the screen
- ★ Display and send disk messages/commands
- ★ Transfer your programs from tape to disk or disk to disk or even disk to tape!* and more!

DMON comes on **DISK** at only £9.95.

A FREE BREAKER WITH EVERY TORNADO IF YOU USE THIS COUPON!!

Do you use tapes? Are you sick and tired of waiting for your programs to be Loaded/Saved from/on the tape? then you need a **TORNADO!!** Tornado allows you to Save/Load/Verify your Basic/machine code programs faster than a CBM 1541 disk drive does!! Due to popular demand! Tordado now comes with new and more powerful commands plus extra instructions to assist you in making fast versions of your existing machine code/Basic programs. Tornado is available on tape for CBM 64 and 8K+ Vic 20.

Do your Run/Stop and Restore keys often fail? Do you want to come out of those crashes?! Or get into those unbreakable programs?! Then what are you waiting for, get yourself a **BREAKER!!** Reset switch and let your computer know who is the boss!! Breaker can be connected to your machine in seconds, no soldering. Included with the Breaker reset switch is basic recovery software on tape. Breaker is now available for any CBM 64 or Vic 20. Available for CBM 64 and the Vic 20 now is the **ROM-FILE** which contains a complete disassembly of CBM 64 and Vic 20 ROM with comments! As well as a complete description of all 6502/6510 instructions and addressing modes + a complete listing of a machine code monitor!

Please send me	....	DMON at £9.95
,,	....	Graphkit at £15.95 (tape) + my free Lightpen
,,	....	Graphkit at £19.95 (disk) + my free Lightpen
,,	....	Lightpen at £11.95
,,	....	Tornado at £9.95 + my free Breaker
,,	....	Breaker at £7.95
,,	....	Romfile at £7.95

Please make cheques/PO payable to:

BSF COMPUTER SERVICES LTD
DEALERS AND GENERAL ENQUIRIES

TEL: 0293-510020

I enclose cheque/PO/cash to the sum of £ ....

Name .... Computer ....

Address ....

....

Please use this form and block letters only. All prices are inclusive of p&p (mail order only, add £2 if outside UK). Please post to:
BSF CSL, 82 FURNACE DRIVE, CRAWLEY, W. SUSSEX RH10 6JE

```
30005 DATA5,185,0,0,5,185,0.0
30006 DATA5.185.0,0,5.185.0.0
30007 DATA4,73,0,0.4,73.0.0
30008 DATA4.73,0.0.4.73.0,0
30009 DATA6,106,0,0,6.106,0.0
30010 REM BLOCK # 1
30011 DATA5,185,0,0,5,185,0,0.255
30021 DATA4,73.5.103.6.106,7.53
30022 DATA7,163,7,53.6.106,5.103
30023 DATA4,73,5,103.6.106,7.53
30024 DATA7,163,7,53.6,106.5,103
30025 DATA5.185,7,69,8.147,9,159
30026 DATA10,60,9,159,8,147,7,69
30027 DATA4.73.5.103,6.106,7,53
30028 DATA7,163,7,53,6.106,5,103
30029 DATA6,106,8.23,9,159.8,23
30031 DATA5,185,7,53,8.147,7.53,255

READY.
```

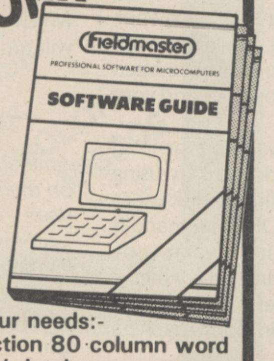
MUSICAL INTERRUPTS

```
3 POKE53280.9:POKE53281.7:POKE53272.23:PRINTCHR$(1
47)"[BLK]WELCOME TO THE SHOW."
5 IFPEEK(49219)<>65THENLOAD "BOOGIETIME".8.1
10 S=54272:POKES+17.255:POKES+19.142:POKES+20.150
20 POKES+24.15:POKE49216.10:POKE49218.0:POKE49219.
65:POKE251.178:POKE252.192
30 POKE253.178:POKE254.192
100 POKES+10.255:POKES+12.142:POKES+13.150
110 POKE51264.10:POKE51266.0:POKE51267.65:POKE247.
178:POKE248.200
120 POKE249.178:POKE250.200:SYS49152
130 PRINT:PRINT:PRINT"AS YOU CAN NOW HEAR. IF YOU
VE GOT THE  VOLUME TURNED UP. ":
140 PRINT"THERE IS SOME MUSIC   PLAYING IN THE BAC
KGROUND. WHILE WE CAN ":
150 PRINT"STILL CARRY ON WITH SOME PROGRAMMING."
160 PRINT:PRINT"TO PROVE IT. LET'S PRINT OUT THE N
UMBERS1 TO 100.":PRINT
170 FORI=1TO2000:NEXTI
180 FORI=1TO100:PRINTI::NEXT
190 PRINT:PRINT:PRINT"YOU CAN BREAK INTO THE PROGR
AM AND LIST IT IF YOU LIKE."
200 GOTO200

READY.
```

```
B*
   PC  SR AC XR YR SP
.:87D8 33 00 C0 00 F6
.
C000 EA           NOP
C001 EA           NOP
C002 EA           NOP
C003 78           SEI
C004 A9 50        LDA #$50
C006 8D 14 03     STA $0314
C009 A9 C0        LDA #$C0
C00B 8D 15 03     STA $0315
C00E 58           CLI
C00F EA           NOP
C010 EA           NOP
C011 60           RTS
C012 78           SEI
C013 A9 31        LDA #$31
C015 8D 14 03     STA $0314
C018 A9 EA        LDA #$EA
C01A 8D 15 03     STA $0315
C01D 58           CLI
C01E EA           NOP
C01F 60           RTS
C020 EA           NOP
.
.
C050 EA           NOP
C051 EA           NOP
C052 EA           NOP
C053 AD 42 C0     LDA $C042
C056 F0 04        BEQ $C05C
C058 4C 31 EA     JMP $EA31
C05B EA           NOP
C05C CE 41 C0     DEC $C041
C05F D0 F7        BNE $C058
C061 EA           NOP
C062 EA           NOP
C063 EA           NOP
C064 AD 40 C0     LDA $C040
C067 8D 41 C0     STA $C041
C06A EA           NOP
C06B E6 FB        INC $FB
C06D D0 02        BNE $C071
C06F E6 FC        INC $FC
C071 EA           NOP
C072 A0 00        LDY #$00
C074 B1 FB        LDA ($FB).Y
C076 C9 FF        CMP #$FF
C078 F0 28        BEQ $C0A2
C07A EA           NOP
C07B EA           NOP
C07C EA           NOP
C07D EA           NOP
C07E A0 00        LDY #$00
C080 8D 0F D4     STA $D40F
C083 E6 FB        INC $FB
C085 D0 02        BNE $C089
C087 E6 FC        INC $FC
C089 EA           NOP
C08A B1 FB        LDA ($FB).Y
C08C 8D 0E D4     STA $D40E
C08F AD 43 C0     LDA $C043
C092 48           PHA
C093 A9 00        LDA #$00
C095 8D 12 D4     STA $D412
C098 68           PLA
C099 8D 12 D4     STA $D412
C09C EA           NOP
C09D EA           NOP
C09E 4C 64 C8     JMP $C864
C0A1 EA           NOP
C0A2 EA           NOP
C0A3 EA           NOP
C0A4 A5 FD        LDA $FD
C0A6 85 FB        STA $FB
C0A8 A5 FE        LDA $FE
C0AA 85 FC        STA $FC
C0AC 4C 64 C0     JMP $C064
C0AF 00           BRK
.
.
C800 EA           NOP
C801 EA           NOP
C802 EA           NOP
C803 78           SEI
C804 A9 50        LDA #$50
C806 8D 14 03     STA $0314
C809 A9 C8        LDA #$C8
C80B 8D 15 03     STA $0315
C80E 58           CLI
C80F EA           NOP
C810 EA           NOP
C811 60           RTS
C812 78           SEI
C813 A9 31        LDA #$31
C815 8D 14 03     STA $0314
C818 A9 EA        LDA #$EA
C81A 8D 15 03     STA $0315
C81D 58           CLI
C81E EA           NOP
C81F 60           RTS
C820 EA           NOP
.
.
C850 EA           NOP
C851 EA           NOP
C852 EA           NOP
C853 AD 42 C8     LDA $C842
C856 F0 04        BEQ $C85C
C858 4C 31 EA     JMP $EA31
C85B EA           NOP
C85C CE 41 C8     DEC $C841
C85F D0 F7        BNE $C858
C861 EA           NOP
C862 EA           NOP
C863 EA           NOP
C864 AD 40 C8     LDA $C840
C867 8D 41 C8     STA $C841
C86A EA           NOP
C86B E6 F7        INC $F7
C86D D0 02        BNE $C871
C86F E6 F8        INC $F8
C871 EA           NOP
C872 A0 00        LDY #$00
C874 B1 F7        LDA ($F7).Y
C876 C9 FF        CMP #$FF
C878 F0 28        BEQ $C8A2
C87A EA           NOP
C87B EA           NOP
C87C EA           NOP
C87D EA           NOP
C87E A0 00        LDY #$00
C880 8D 08 D4     STA $D408
C883 E6 F7        INC $F7
C885 D0 02        BNE $C889
C887 E6 F8        INC $F8
C889 EA           NOP
C88A B1 F7        LDA ($F7).Y
C88C 8D 07 D4     STA $D407
C88F AD 43 C8     LDA $C843
C892 48           PHA
C893 A9 00        LDA #$00
C895 8D 0B D4     STA $D40B
C898 68           PLA
C899 8D 0B D4     STA $D40B
C89C EA           NOP
C89D EA           NOP
C89E 4C 31 EA     JMP $EA31
C8A1 EA           NOP
C8A2 EA           NOP
C8A3 EA           NOP
C8A4 A5 F9        LDA $F9
C8A6 85 F7        STA $F7
C8A8 A5 FA        LDA $FA
C8AA 85 F8        STA $F8
C8AC 4C 64 C8     JMP $C864
C8AF 00           BRK
.
.
.:C0B3 04 49 00 00 04 49 00 00
.:C0BB 04 49 00 00 04 49 00 00
.:C0C3 04 49 00 00 04 49 00 00
.:C0CB 04 49 00 00 04 49 00 00
.:C0D3 05 B9 00 00 05 B9 00 00
.:C0DB 05 B9 00 00 05 B9 00 00
.:C0E3 04 49 00 00 04 49 00 00
.:C0EB 04 49 00 00 04 49 00 00
.:C0F3 06 6A 00 00 06 6A 00 00
.:C0FB 05 B9 00 00 05 B9 00 00
.
.
.:C8B3 04 49 05 67 06 6A 07 35
.:C8BB 07 A3 07 35 06 6A 05 67
.:C8C3 04 49 05 67 06 6A 07 35
.:C8CB 07 A3 07 35 06 6A 05 67
.:C8D3 05 B9 07 45 08 93 09 9F
.:C8DB 0A 3C 09 9F 08 93 07 45
.:C8E3 04 49 05 67 06 6A 07 35
.:C8EB 07 A3 07 35 06 6A 05 67
.:C8F3 06 6A 08 17 09 9F 08 17
.:C8FB 05 B9 07 35 08 93 07 35
```

TURN YOUR COMMODORE 64 INTO A PROFESSIONAL MICROCOMPUTER



FIELDMASTER high quality programs are for the serious user of the home computer.

The very latest programming techniques have been used to create clear, easy to use software that must be the finest value available.

We have a program for all your needs:- Powerful spreadsheet, full function 80 column word processor, versatile 'card index' database, accounts management, and even a logo & poster printer.

For applications in small business, education, the professions, industry and the home, etc.

Prices from £21·95 to £84·95 inc VAT tape and disk.
From your local computer shop or direct from us by our fast mail order service.
Access/Barclaycard welcome.

For a FREE copy of our software guide, packed with program information, just write or telephone.

MORE STOCKISTS WANTED INTERESTED? Ask For Details

Fieldmaster

Fieldmaster Software Company
Dept CCI, 107 Oakwood Park Road, Southgate, London N14 6QD. Tel: 01-886 6709
a division of Young Electronics Ltd. (Established 1970)

ZOOM PASCAL. Powerful structured compiler, producing 6502 m/c. UCSD pascal commands, data types etc., and many additional commands, and an EDITOR. **£24.95 —**

ASSEMBLER 64. professional development tool. Full assembler/disassembler allowing LABELS, VARIABLES, PSEUDO OPS and CONTROL COMMANDS. **£11.99/7.99**

DATABASE 64. menu driven database. Max 30000 records, 255 bytes/record, 15 fields/record. CREATE database. ADD, INSERT, DELETE, AMEND records. SEARCH for records on any field, including wild card matching(?,*). LOAD/SAVE datebases to tape/disk **£11.99/7.99**

ULTRABASIC 64. 50 extra commands-High res/multi colour (DOT, DRAW, BOX, CIRCLE FILL), Sprites (SPRITE, PLACE, ROTATE, OFF), Sound (SOUND, GEN, TUNE), Game (PADDLE, PEN, JOY), Turtle graphics (TURTLE, MOVE, TCOLOUR, TURN, TURNTO), Timer/collisions (CLK, SCLK, SCOLL, BCOLL). Plus many more. **£19.95/ 14.95**

SYNTHY 64. Turns your 64 into a music & sound synthesizer, a piano, banjo flute, drum and most other instruments. Also write your own music. **£12.50/9.95**

SUPER DISK UTILITY 64. Copy 1541 disk in 4 ways-TOTAL, BAM, FILE, APPEND. Display BAM, directorys. Edit/Change/Print any sector. Works with 1 drive. **£12.50 —**

CHARTPAK 64. Produces professional high res.pie/bar & line charts, & graphs. Data accepted in many formats. **£24.95 —**

GRAPHICS DESIGNER. Menu driven graphics editor. High/Low res. screens. Edit, load, save, print picture. Keyboard, joystick, light pen. Features include line box, circle, oval, triangle, fill, text, caption. **£19.95 —**

CHECK BOOK MANAGER. Computerised cheque balancing. Performs many functions. Store, Edit, Amend, Delete records. Much more. **£12.50 —**

ANATOMY OF THE 1541 DISK DRIVE. 300+ page book. Technical guide of 1541. ROM disassembly with comments, disk commands, data storage, DOS operation, relative records, direct access, disk structure, programs & losts more. **£14.95**

FRENCH 64-GERMAN 64. Two education packages, developed by an education expert. Both packages are graded. 9 lessons, teaching & testing verbs, grammer, vocabulary, spelling & sentences. Both packages - £16.96/12.95. **£12.95/8.95**

COMPUTING 64. Introduction to computers. Teaches programming, cpu, peripherals, database, operating systems, communications & more. **£12.95/8.95**

All prices are DISK/TAPE. '—' means unavailable on tape.
All programs come with a comprehensive manual.
sae for details. overseas add £5.00

DYNAMITE SOFTWARE
BCM 8713, LONDON, WC1N 3XX

Superbase 64

TRANSFORMS THE COMMODORE 64 INTO A FULL FEATURED PROFESSIONAL DATABASE SYSTEM, WITH UP TO 1000 CHARACTERS PER RECORD ON UP TO 4 SCREENS... AND UP TO 128 ITEMS PER RECORD, DEFINABLE AS KEY, TEXT, NUMERIC, CONSTANT, RESULT OR DATE, IN FILES OF UP TO 16M CHARACTERS! SUPERBASE 64 EVEN HAS A SPREADSHEET AND CALCULATOR CAPABILITY, CALENDAR FUNCTIONS, EASY INPUT FROM WORDPROCESSOR OR DATA FILES, BOTH MENU-DRIVEN AND PROGRAM OPTIONS, SORTING/SEARCHING, FULLY DEFINABLE OUTFUTS... SUPERBASE 64 IS ESSENTIAL IF YOU WANT THE MOST FROM YOUR 64! SUPPLIED ON 1541 DISK WITH EXCELLENT TUTORIAL/REFERENCE MANUAL PLUS AUDIO LEARNING TAPE... AND THERE'S A WIDE CHOICE OF "GET-YOU-GOING" APPLICATION STARTER PACKS AT ONLY £9.95 EACH!

OUR PRICE ~~£99.95~~ £88.00

Jetpack

YOUR PROGRAMS WILL REALLY TAKE OFF WITH DTL JETPACK! FULLY COMPATIBLE WITH BASIC, JETPACK COMPILES BASIC PROGRAMS INTO MACHINE CODE, RUNNING UP TO 25 TIMES FASTER AND EVEN USING UP TO HALF AS MUCH MEMORY... AND IT ACCEPTS EXTENDED BASIC AND MACHINE CODE ROUTINES TOO!

OUR PRICE (DISK) ~~£39.95~~ £35.95

FIGARO 64

AT LAST, AN EASY-TO-USE YET POWERFUL NUMERIC DATABASE, WITH A FULL RANGE OF BUILT-IN STATISTICAL FUNCTIONS, PLUS FORECASTING, CALCULATION AND MIXED HI-RES/TEXT GRAPHICS. SUPPLIED ON DISK WITH CLEAR, COMPREHENSIVE MANUAL, FUNCTION-KEY OVERLAY, DEMO PROGRAM.

OUR PRICE ~~£86.25~~ £75.00

Vizawrite 64

VIZAWRITE 64 IS A HIGH-PERFORMANCE, LOW-COST WORD PROCESSOR, WITH ON-SCREEN FORMATTING, THAT TAKES FULL ADVANTAGE OF THE 64'S COLOUR, GRAPHICS AND MEMORY FEATURES... AND SUPPORTS VIRTUALLY ANY PRINTER! WITH A COMPREHENSIVE AND EASY-TO-FOLLOW USER REFERENCE MANUAL, VIZWRITE IS THE ULTIMATE PERSONAL COMPUTER WORD PROCESSOR! AVAILABLE ON CARTRIDGE (~~£89.95~~ £78), DISK (~~£79.95~~ £68) OR WITH VIZASPELL (~~£99.95~~ £85)

*** WANT IT TOMORROW? *** CALL US TODAY! *** ON 01-546-7256

VIZASPELL	(DISK)	~~£59.95~~	£49.95	MULTIPLAN (US)	(DISK)	~~£79.95~~	£67.95
VIZASTAR	(DISK)	~~£99.95~~	£89.00	PRACTICALC	(DISK)	~~£44.50~~	£39.95
DTL JETPACK	(TAPE)	~~£14.95~~	£13.95	PRACTICALC	(TAPE)	~~£39.95~~	£34.95
EASYSCRIPT	(DISK)	~~£75.00~~	£65.00	MASTER 64	(DISK)	~~£115.00~~	£64.95
EASYSPELL	(DISK)	~~£50.00~~	£41.95	THE TOOL	(CART)	~~£49.95~~	£39.95
SIMON'S BASIC	(CART)	~~£50.00~~	£41.95	HOMEBASE 1-4	(DISK)	......	£17.95
ASSEMBLER 64	(DISK)	~~£24.95~~	£21.95	PRINTLINK 64 INTERFACE		......	£29.95

PRICES INCLUDE 15% VAT AND ARE CORRECT ON GOING TO PRESS. ORDER BY POST OR PHONE, USING CHEQUE, ACCESS/BARCLAY CARD OR OFFICIAL ORDER. DESPATCH IS BY SAME-DAY 1ST CLASS POST, PRE-PAID ORDERS FREE. PRODUCT DATA AVAILABLE ON REQUEST. REF A30

Calco Software

LAKESIDE HOUSE, KINGSTON HILL, SURREY, KT2 7QT. TEL 01-546-7256

DOCTADISK

SUFFERED ANY OF THESE AILMENTS LATELY???

1.) CORRUPTED DATA
2.) CRASHED DISCS
3.) HOURS OF WASTED TIME
4.) LOST VALUABLE DATA
5.) SLIGHT SCRATCHES OR DENTS PREVENTING FURTHER USE OF A DISC

WELL ITS TIME YOU USED OUR DOCTADISK TO HELP RECOVER YOUR INFORMATION

FEATURES

- WILL RETRIEVE CORRUPTED DATA
- ALLOWS YOU TO TRANSFER DATA TO A NEW DISC
- GIVES NEW DISC IDENTICAL HEADER
- SHOWS TRACK AND SECTOR WHERE ERROR OR FAULT IS
- WILL ALLOW YOU TO RE-USE ORIGINAL DISC IF NOT PHYSICALLY DAMAGED
- USER FRIENDLY AND EASY TO OPERATE
- A FREE DISC TO TRANSFER YOUR DATA TO.
- SECURITY BACKUP OF MOST DISCS

****
FREE BLANK DISK
INCLUDED*

commodore 64

PRICE £ 15.95 inc. VAT

Postage and packing

DEALER ENQUIRIES WELCOME

CHEQUES AND P.O. s to: MERMAID SOFTWARE
27 Buckingham Gardens, Edgware, Middlesex HA8 6NB.
Tel: (01) 951 3355 Telex 923574 ALACOL G
(01) 951 0906

PROGRAMMERS: Contact us if you have any interesting programs - We would like to hear from you.

LETTERS

Dear Editor

I have purchased Volume 2, numbers 9 to 12 of your magazine in computer stores here in Toronto.

The first program I have typed in is "Reformed characters" from page 64 of Volume 2 No 9, but I can't make it work. I typed in the monitor dump and it works, but ONLY FOR THE FIRST LINE of any program. Lines after the first are not reformed.

I have checked my typing very carefully twice and I'm convinced I have got it right. What could be wrong?

A W Ludlam
Islington Ontario
Canada

The best advice we can give you is to recheck the whole program again as we have found no mistakes. There are qite a few numbers to type in and an error is easily made. Sorry we can't be more exact!

Dear Editor

How do you record sounds from the 64?

I would like to record the sound of Morse on to a Ferguson Cassette Recorder. It has a 5-pin Din Socket. Is there any way of connecting the 64 to the Ferguson.

Thanks for the great magazine!

Mr J J Sales
Lancaster
LA15 5RW

It is possible to connect the Ferguson to the 64, but you will need to make your own cable connections.

Pins 2 and 3 are the important ones and are respectively the ground and the audio out. You can either splice the cable yourself or get someone else to do it so that the cable plugs into the 5 pin Din audio/video socket at the back of the 64. Fit a suitable 5 pin din plug on the cable for the Ferguson.

If you are still unsure contact Ferguson themselves, they may have some useful tips.

Dear Editor

I noticed that in the June Letter's Page, Mr Geest from Belgium wanted to know if there were any user clubs in that country.

We started a 64 user club in Leuven a few months ago. Ring or write to either myself (address below) or Charles Rondas of Gelijkheidsstraat 2, 3200 Leuven, Tel: 25.73.77.

Willy Wellekens
Molenstraat 147
B-3200 Leuven
Tel: 25.52.50

Dear Editor

I bought your magazine for the first time last month in my capacity as a new 64 owner, primarily because of the machine code merge and renumber routines. I have been unable to merge disk files together and your program looked ideal.

However, I didn't really want to type in all the machine code and decided to try using the "VIC 1541 single drive floppy disk user's manual". On page 16, a COPY command is explained, together with the "format copy to combine files" and having tried what it suggests (plus various alterations) I fear I shall be obliged to type in your machine code!

Could you tell me if it is possible to make Print 15,"CO:newfile=*:oldfile1,0:oldfile2,0:oldfile3,0:oldfile4" do more than copy just one file, as that is all I achieve at present.

Nigen Tantrum
Reading
Berks

First the bad news – the COPY command in the manual mentioned is really intended for a 4040 dual disk drive and it can't be used to merge files. What it does do is transfer files from one disk to another in the 4040 disk drive.

The good news is that our Merge routine will be ideal for your requirements and will be worth the effort of typing the program in!

Dear Editor

Are there any interfaces on the market for the 64 which satisfy the following criteria.

* A hardware interface to connect the 64 and Centronics printer.

* Which does not use any of the 64 address space and in particular does not need any RAM.

* Does not need any modifications on the 64 firmware, but automatically and transparently converts – in hardware – the standard printer codes of the 64 to the Centronic standards.

If no device exists, please could you tell me which unit would satisfy some of these requirements.

Michael Buckner
Balham
London SW12 8SQ

The perfect interface awaits you! The Tripler or Vic Sprinter from Ram Electronics – 106 Fleet Road, Fleet, Hants. Tel: 02514 5858 – satisfies all those requirements and costs £49.95.

Dear Editor

Could you please tell me if American games which are bought on cassette in America will run on British 64 systems?

Ewan Watson
Perthshire
Scotland

American manufacturers usually put a check on their software, but if they don't, the software will be compatible with British systems. It's worth asking before purchasing. If there is a check, then you are likely to have quite a few problems!

It really depends on the complexity of the game. The more complicated ones will probably crash. The quality of games which contain a lot of graphics and colour will probably be rather dubious when played on British 64's. For instance circles may appear as ovals and colours especially red and will be much duller.

Dear Editor

I am 13 years old and I own a VIC 20. At the School I attend, rumours are going about that you might be discontinuing the VIC. Will you carry on with software?

Chris Gregg
Orpington
Kent

Our magazine is in fact totally independent of Commodore, the manufacturers of the 64 and the VIC 20.

However we do know that Commodore are not producing the VIC 20 computer in the UK any more, but will continue to produce software for it. They know that many people like yourself still have VIC 20's and will of course want new good quality software.

Dear Editor

Is there any way that a VIC 20 game such as Snooker by Visions Software factory, which needs 3K expansion, can run on a 16K expanded VIC 20? Or does it need a program to run properly?

A J Larner
High Wycombe
Bucks

Any VIC 20 game which specifically requires 3K expansion is unlikely to operate with any other expansion, 16K or otherwise. (Unless of course the casette states that it will.) In this case Snooker only works with a 3K expansion.

THE ADDRESS TO WRITE TO IS:
QUERIES, Commodore Computing International,
Finsbury Business Centre,
40 Bowling Green Lane, London EC1
THE TELEPHONE NUMBER TO CALL IS:
01-278 0333 (remember – Thursday afternoons, 2 pm till 5 pm)

TELEPHONE ENQUIRIES:
If you are really desperate for an answer and feel you really cannot wait for a published reply you can use our telephone enquiry service. We will have two of our staff standing-by every Thursday afternoon between 2 pm and 5 pm. That's when we want to hear from you.

MULTI-USER
WINCHESTER
HARD DISK
for
COMMODORE
MICROS

adcomp

18 Mb nett, in 4 logical drives
36 Mb nett, in 8 logical drives
Up to 12 users
Specially designed for compatibility with the CBM 8000 series
300 systems + in daily use throughout Europe

ADCOMP (UK) Ltd
56 Long Street, Dursley, Glos.
Tel: 0453 46496

READY NOW!

complete software packages for car fleet management

Car Fleet Control are leaders in vehicle fleet control systems on micro computer. In addition to designing and installing complete systems to suit each customer's exact requirements, which we have been doing for years, we now market a range of standard well proven software packages for IBM PC or Commodore 8032.
These systems are suitable for single or multi terminal operation, floppy or hard disc. For anything to do with vehicle fleet management contact us today.
We will send brochures or arrange a demonstration.

Car Fleet Control
fleet management at your finger tips

Car Fleet Control Limited
Cannon House,
2255 Coventry Road,
Sheldon,
Birmingham B26 3NX
Tel: 021-742 8771

Superbase 64

The natural development for Commodore 64 users

Unlock the full potential of your disk-based Commodore 64, use Superbase 64 – the complete records-handling system that puts business-style power and practicality at your fingertips.

Superbase 64 solves a host of filing problems with its easy record formatting, powerful indexing and sorting, extensive outputting options, and its 'Superbasic' programming capability.

- Invoices
- Finance & Banking
- Collections
- Recipes
- Personal Filing
- Stock
- Prospects
- Management Accounts
- Car Fleet Records
- and many, many more!

Superbase 64 – The complete information control system for the Commodore 64 includes a simple-to-follow manual.

Complete your Commodore 64 – Complete the coupon

More information on Superbase 64 is available from Commodore Dealers, Major Retailers or from Precision Software direct.
From the authors of Easy Script.

Now with Audio Learning Cassette

Please send me more information on Superbase 64.
Name ____________________ Tel ________
Address ____________________
____________________ Age ________
Occupation ____________________

Precision Software
Precision Software Ltd. 6 Park Terrace,
Worcester Park, Surrey, KT4 7JZ
Tel:
Telex: 8955021
PRECIS G

OFFICIALLY APPROVED BY COMMODORE

commodore
Superbase 64
The complete information control system for the Commodore 64.

Figure it out

This month we have a program written by MIKE HURD called Maths Quiz. This program was written for his young children to help them with the basic maths functions of Addition, Subtraction, Multiplication and Division.

Maths Quiz was written for the Commodore 64 and tests you on 10 calculations in your chosen topic.

If they are too easy, Mr Hurd says that they can be made harder by simply changing the program at the required places.

```
 1 POKE53280,6:POKE53281,3:PRINT"[CLS]":PRINTTAB(13)"[7CD][BLK]**************"
 3 PRINTTAB(13)"* MATHS QUIZ *":PRINTTAB(13)"*[12SPC]*"
 5 PRINTTAB(13)"*[5SPC]BY[5SPC]*":PRINTTAB(13)"*[12SPC]*"
 7 PRINTTAB(13)"* MIKE HURD[2SPC]*":PRINTTAB(13)"**************":FORX=1TO5000:NE
XTX
 10 P=0:W=0:PRINT"[CLS][2CD]PLEASE ENTER YOUR NAME":INPUTNAME$
 20 POKE53281,3:PRINT"[CLS][BLK][CD][12CR][REV]ENTER SUBJECT:-[OFF]"
 30 PRINT"[2CD][CR]ADDITION [7G<@] 'A'",,"[CD][CR]SUBTRACTION [4G<@] 'S'"
 40 PRINT"[CD][CR]MULTIPLICATION [G<@] 'M'",,"[CD][CR]DIVISION [7G<@] 'D'"
 50 PRINT"[2CD][CR]**************************************"
 60 PRINT"[2CD][CR]PRESS 'R' FOR NEW PLAYER":PRINT"[CD][CR]PRESS 'G' FOR GUESSIN
G GAME"
 70 PRINT"[CD][CR]PRESS 'H' TO SWITCH ON SOUND":PRINT"[CD][CR]PRESS 'L' TO SWITC
H OFF SOUND"
 80 GETC$:IFC$=""THEN80
 90 IFC$="A"THENGOSUB5000:GOTO200
 100 IFC$="S"THENGOSUB5000:GOTO400
 110 IFC$="M"THENGOTO600
 120 IFC$="D"THENGOSUB1000:GOTO800
 130 IFC$="L"THENPOKE54296,0:GOTO80
 140 IFC$="H"THENPOKE54296,10:GOTO80
 150 IFC$="R"THENGOTO10
 160 IFC$="G"THENGOTO8000
 170 IFC$<>"+"ORC$<>"-"ORC$<>"*"ORC$<>"/"ORC$<>"L"ORC$<>"H"ORC$<>"G"THEN80
 180 IFC$<>"G"THEN80
 199 REM *********   ADDITION   *********
 200 GOSUB1000:POKE53281,6
 210 N=INT(RND(0)*HF)+1:M=INT(RND(0)*LF)+1:B=0:J=0
 220 IFM>NTHENGOTO210
 230 PRINT"[CLS][CD][2CR][WHT]RIGHT";P;"[7CR]";J+1;"TRY[8CR]WRONG";W
 240 IFJ=>1THENPRINT"[CU][15CR]";J+1;"TRIES"
 250 Q=N+M:GOSUB6000
 260 PRINTTAB(23-L)"[4CD]";N
 270 PRINTTAB(22-LL)"+";M
 280 PRINTTAB(18)"[6G>*]"
 290 A=0:PRINTTAB(22-LA):INPUTA
 300 IFA=N+MTHENGOSUB4000:GOSUB2000:GOTO210
 310 IFJ<3THENGOSUB3000:IFJ>2THENGOSUB330:GOTO210
 320 GOTO230
 330 B=N+M:PRINT"[2CD]THE ANSWER TO ";N;"+";M;"=";B:FORX=1TO3500:NEXTX:RETURN
 399 REM ********  SUBTRACTION  *********
 400 GOSUB1000:POKE53281,6
 410 N=INT(RND(0)*HF)+1:M=INT(RND(0)*LF)+1:B=0:J=0
 420 IFM>NTHENGOTO0410
 430 PRINT"[CLS][CD][2CR][WHT]RIGHT";P;"[7CR]";J+1;"TRY[8CR]WRONG";W
 440 IFJ=>1THENPRINT"[CU][15CR]";J+1;"TRIES"
 450 Q=N-M:GOSUB6000
 460 PRINTTAB(23-L)"[4CD]";N
 470 PRINTTAB(22-LL)"-";M
 480 PRINTTAB(18)"[6G>*]"
 490 A=0:PRINTTAB(22-LA):INPUTA
 500 IFA=N-MTHENGOSUB4000:GOSUB2000:GOTO410
 510 IFJ<3THENGOSUB3000:IFJ>2THENGOSUB530:GOTO410
 520 GOTO430
 530 B=N-M:PRINT"[2CD]THE ANSWER TO ";N;"-";M;"=";B:FORX=1TO3500:NEXTX:RETURN
 599 REM ******  MULTIPLICATION  ********
 600 POKE53281,6:PRINT"[CLS][2CD][WHT][REV]SELECT TABLES YOU REQUIRE (2-12)":INP
UT"[3CD]";M
 610 IFM<2ORM>12THENGOTO600
 620 GOSUB1000
 630 N=INT(RND(1)*12)+1:B=0:J=0
 640 PRINT"[CLS][CD][2CR]RIGHT";P;"[7CR]";J+1;"TRY[8CR]WRONG";W
 650 Q=N*M:IFM>NTHENGOSUB7000:GOTO710
 660 Q=N*M:GOSUB6000
 670 PRINTTAB(23-L)"[4CD]";N
 680 PRINTTAB(22-LL)"*";M
 690 PRINTTAB(18)"[6G>*]"
 700 A=0:PRINTTAB(22-LA):INPUTA
 710 IFA=M*NTHENGOSUB4000:GOSUB2000:GOTO630
 720 IFJ<3THENGOSUB3000
 730 IFJ>2THENGOSUB750:GOTO630
 740 GOTO640
 750 B=N*M:PRINT"[2CD]THE ANSWER TO ";M;"*";N;"=";B:FORX=1TO3500:NEXTX:RETURN
 799 REM *********  DIVISION  ***********
 800 POKE53281,6
 810 N=INT(RND(1)*144)+1:M=INT(RND(1)*12)+1
 820 IFM>NTHENGOTO0800
 830 B=N/M:IFB>12THENGOTO0810
 840 IFB<>INT(N/M)THENGOTO0810
 850 B=0:J=0
 860 PRINT"[CLS][CD][2CR][WHT]RIGHT";P;"[7CR]";J+1;"TRY[8CR]WRONG";W
 870 IFJ=>1THENPRINT"[CU][15CR]";J+1;"TRIES"
 880 PRINT"[5CD][4CR]WHAT IS ";N;"/";M;"="
 890 A=0:INPUT"[HOM][7CD][23CR]";A
 900 IFA=N/MTHENGOSUB4000:GOSUB2000:GOTO800
 910 IFJ<3THENGOSUB3000
 920 IFJ>2THENGOSUB940:GOTO800
 930 GOTO860
 940 B=N/M:PRINT"[2CD]THE ANSWER TO ";N;"/";M;"=";B:FORX=1TO3500:NEXTX:RETURN
 999 REM ********************************
 1000 PRINT"[CLS][5CD][11CR]HELLO ";NAME$
 1010 PRINT"[4CD][6CR]I HAVE TEN QUESTIONS FOR YOU":FORX=1TO2000:NEXTX:RETURN
 1999 REM *******************************
 2000 P=P+1:PRINT"[4CD][4CR]WELL DONE ";NAME$:FORX=1TO1100:NEXTX:IFP<10THENRETUR
N
 2010 PRINT"[CLS][CD][2CR][WHT]RIGHT";P;"[20CR]WRONG";W
 2020 W=W+1:J=P/W*10:PRINT"[7CD][11CR]YOUR SCORE=";INT(J)
 2030 PRINT"[8CD][2CR]PRESS 'M' FOR MENU"
 2040 IFA=M*NTHENPRINT"[CD][2CR]PRESS 'T' FOR TABLES"
 2050 P=0:W=0:J=0:PRINT"[CD][2CR]PRESS 'Y' TO CONTINUE"
 2060 IFA=N+MORA=N-MTHENPRINT"[CD][2CR]PRESS 'V' FOR NEW VALUES"
 2070 GETA$:IFA$=""THEN2070
 2080 IFA$="M"THENGOTO20
 2090 IFA$="Y"THENPRINT"[CLS]":RETURN
 2100 IFA$="T"THENGOTO600
```

```
2110 IFA$="V"ANDA=N+MTHENGOSUB5000:GOTO200
2120 IFA$="V"ANDA=N-MTHENGOSUB5000:GOTO400
2130 IFA$<>"M"ORA$<>"Y"ORA$<>"T"ORA$<>"U"ORA$<>"V"THEN2070
2999 REM ******** WRONG ****************
3000 PRINT"[CLS][5CD]":W=W+1:J=J+1:PRINTTAB(10)"SORRY! WRONG":PRINTTAB(11)"[CD]
";A;"?"
3010 FORK=1TO7:POKE54276,17:POKE54277,8:POKE54278,200:POKE54273,75:POKE54272,25
3020 FORZ=1TO70:NEXTZ:POKE54273,50:POKE54272,200:FORZ=1TO70:NEXTZ
3030 POKE54276,0:NEXTK:FORX=1TO1000:NEXTX:RETURN
3999 REM ******* RIGHT *****************
4000 POKE53280,1:FORK=5TO30:POKE54276,33:POKE54277,8:POKE54278,8:POKE54273,K
4010 POKE54272,250-K:FORZ=1TO30:NEXTZ:POKE54276,0:NEXTK:POKE53280,6:RETURN
4999 REM ********* VALUES ***************
5000 P=0:POKE53281,3:PRINT"[CLS][2CD][BLK]ENTER HIGHEST FIGURE (10-1000)"
5010 INPUT"[CD][4CR]";HF:IFHF>1000ORHF<10THENGOTO5000
5020 PRINT"[CLS][2CD]ENTER LOWEST FIGURE (9-999)"
5030 INPUT"[CD][4CR]";LF:IFLF>999ORLF<9THENGOTO5020:RETURN
5999 REM **** NUMBER POSITION **********
6000 LETX=N
6010 X$=STR$(X)
6020 L=LEN(X$)
6030 LETY=M
6040 X$=STR$(Y)
6050 LL=LEN(X$)
6060 LETZ=Q
6070 X$=STR$(Z)
6080 LA=LEN(X$)
6090 RETURN
6999 REM ****** REVERSE NUMBER *********
7000 LETY=M
7010 X$=STR$(Y)
7020 L=LEN(X$)
7030 PRINTTAB(23-L)"[4CD]";M
7040 LETY=N
7050 X$=STR$(Y)
7060 L=LEN(X$)
7070 PRINTTAB(22-L)"*";N
7080 PRINTTAB(18)"[6G>*]"
7090 LETY=Q
7100 X$=STR$(Y)
7110 L=LEN(X$)
7120 A=0:PRINTTAB(22-L):INPUTA
7130 RETURN
8000 REM ********* GAME ****************
8010 POKE53281,7:POKE53280,6:PRINT"[CLS][2CD][5CR][BLK]*** NUMBER GUESSING GAME
***"
8020 INPUT"[3CD][3CR]ENTER UPPER LIMIT FOR GUESS";LI
8030 NM=INT(LI*RND(1))+1:CN=0:PRINT"[CLS][4CD]I'VE GOT THE NUMBER"
8040 INPUT"[CD][CR]WHAT IS YOUR GUESS";GU:CN=CN+1
8050 IFGU>NMTHENPRINT"[CD][CR]MY NUMBER IS LOWER":PRINT:GOTO8040
8060 IFGU<NMTHENPRINT"[CD][CR]MY NUMBER IS HIGHER":PRINT:GOTO8040
8070 IFGU=NMTHENGOSUB4000:PRINT"[2CD][2CR]GREAT YOU GOT MY NUMBER ";NAME$
8080 PRINT"[2CD][2CR]IN ONLY";CN;"GUESSES.":PRINT
8090 IFCN<2THENPRINT"[HOM][12CD][2CR]IN ONLY";CN;"GUESS.[3SPC]":PRINT
8100 FORX=1TO5000:NEXTX
8110 PRINT"[CLS][8CD][5CR]PRESS 'Y' TO CONTINUE":PRINT"[CD][5CR]PRESS 'M' FOR M
ENU"
8120 GETA$:IFA$=""THEN8120
8130 IFA$="Y"THENGOTO8000
8140 IFA$="M"THENGOTO20
8150 IFA$<>"Y"ORA$<>"M"THEN8120
READY.
```

COMMODORE *Games*

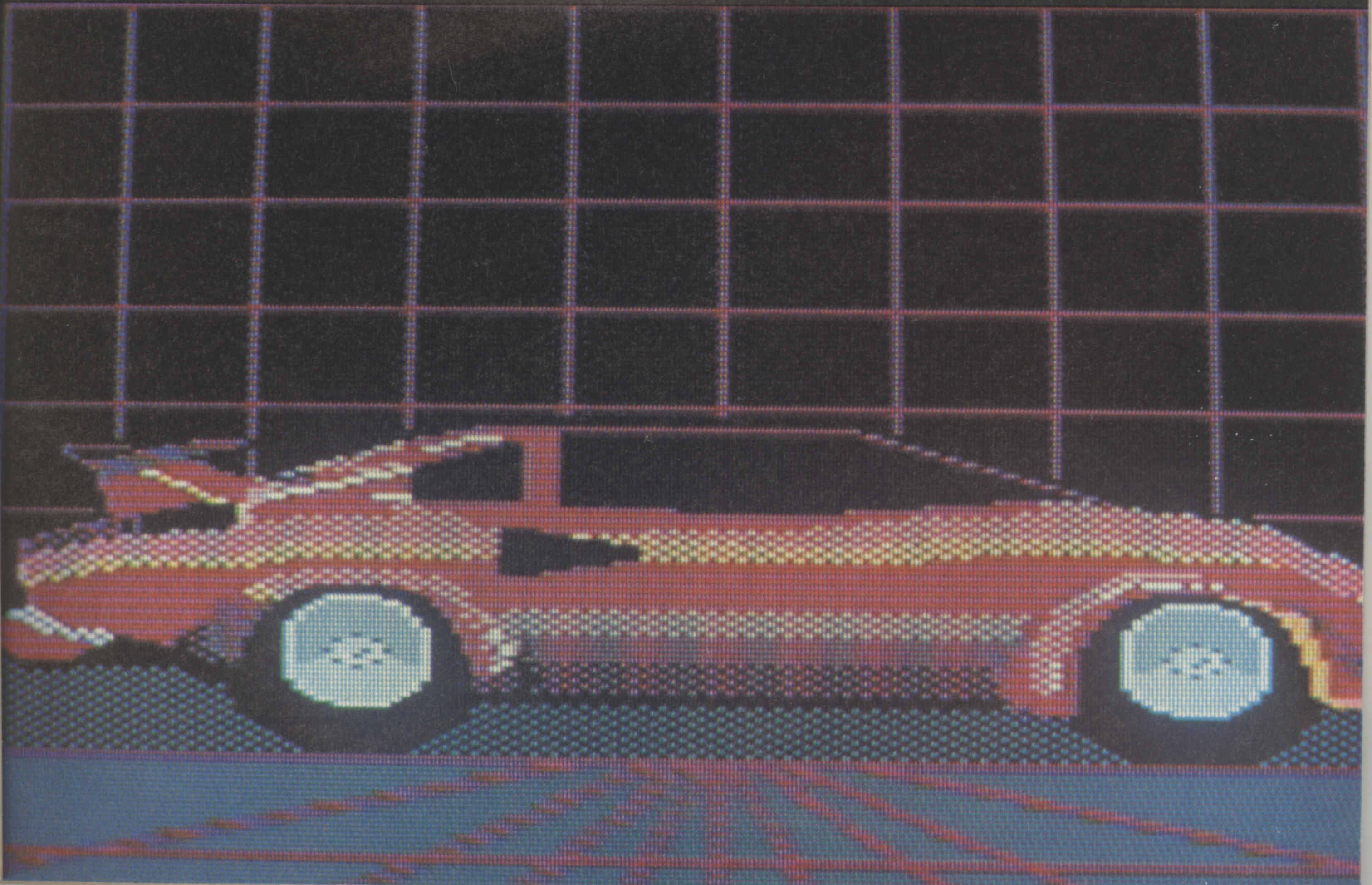
OCTOBER 1984

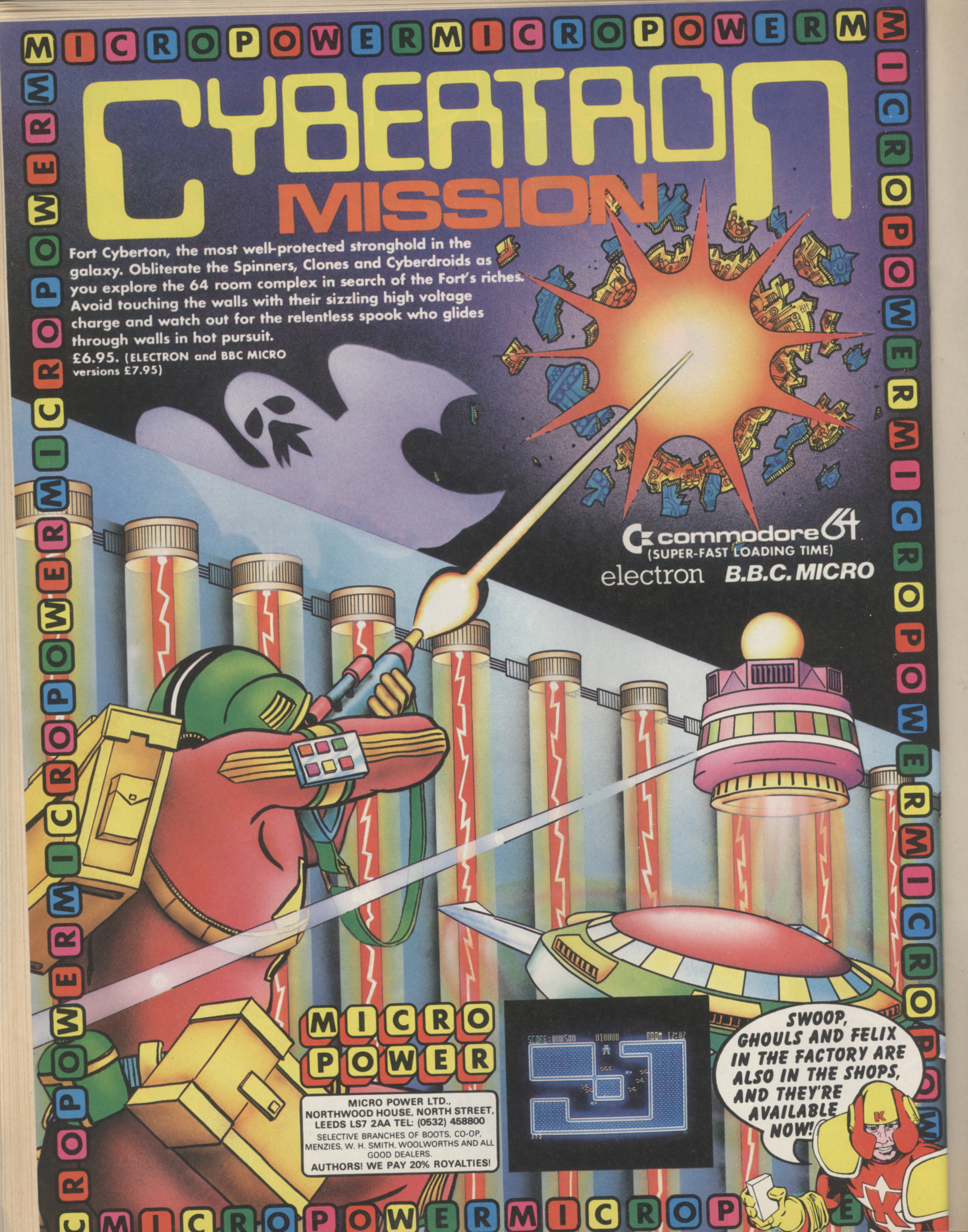
Sports for All

Reviews - The latest games

The Top Twenty

Compose a tune and...win an MT200 Casio Keyboard!




MICROPOWER
SCORE:008580
010000
ROOM 12:02
SWOOP, GHOULS AND FELIX IN THE FACTORY ARE ALSO IN THE SHOPS, AND THEY'RE AVAILABLE NOW!
K

CYBERATRON MISSION

Fort Cyberton, the most well-protected stronghold in the galaxy. Obliterate the Spinners, Clones and Cyberdroids as you explore the 64 room complex in search of the Fort's riches. Avoid touching the walls with their sizzling high voltage charge and watch out for the relentless spook who glides through walls in hot pursuit.

£6.95. (ELECTRON and BBC MICRO versions £7.95)

commodore 64
(SUPER-FAST LOADING TIME)

electron B.B.C. MICRO

MICRO
POWER

MICRO POWER LTD.,
NORTHWOOD HOUSE, NORTH STREET,
LEEDS LS7 2AA TEL: (0532) 458800

SELECTIVE BRANCHES OF BOOTS, CO-OP, MENZIES, W. H. SMITH, WOOLWORTHS AND ALL GOOD DEALERS.

AUTHORS! WE PAY 20% ROYALTIES!

Mosaic adventures

Three illustrated text adventures based on popular books have been released by Mosaic Publishing.

Erik the Viking is based on the children's book The Saga of Erik the Viking, by Monty Python's Terry Jones. Programmed by Level 9 Computing, the game is designed to appeal to all ages from eight upwards and comes complete with a 20-page booklet containing extracts from the book.

The Stainless Steel Rat Saves the World, based on Harry Harrison's sci-fi classic, includes a paperback copy of the book. Michael Moorcock's Oswald Bastable stories are the basis for The Nomad of Time, which includes a 16-page booklet with an extract from the Nomad of Time trilogy.

All three adventures are available for the 64, costing £9.95 each.

Contact: Mosaic Publishing, 187 Upper Street, Islington, London N1. Tel: 01-226 0828.

Virgin cuts

Virgin Games are reducing the price of 32 games down to £2.99 until the end of November. Included in this offer are Commodore titles such as Falcon Patrol, Hideous Bill and Mission Mercury.

Two new titles have also been announced. Falcon Patrol II continues the desperate desert war and features 3D graphics.

Terrorist puts the player in the role of Red Commander to an anti-terrorist squad with the mission of making safe a town.

Both these 64 titles cost £7.95.

Contact: Virgin Games, 2-4 Vemon Yard, Portobello Road, London W1. Tel: 01-727 8070.

Death of the joystick

Could Cheetah Marketing's new Remote Action Transmitter (RAT for short) bring about the death of the traditional joystick?

RAT is a remote hand-held unit reliant on infra-red signals. Initially developed for the Spectrum, a 64 version is said to be in the pipe-line.

Retailing at £29.95, the RAT can only be used with Cheetah RAT and Kempston joystick compatible games. Software writers can incorporate RAT compatability in programs through the use of a six line coding provided by Cheetah Marketing in both BASIC and Machine Code form.

RAT consists of two pieces of hardware: a black-cased receiver which plugs directly into the edge connector at the rear of the computer and a transmitter, powered by a PP3 battery, which has been designed to fit neatly into the palm of either hand.

Touch controllable, the RAT utilises two touch sensitive pads — one controlling rapid fire and the other, direction.

Infra-red signals transmitted from the RAT's nose are picked up by the infra-red diode sited in the front of the receiver. As it operates on a different infra-red frequency to other products such as TVs and video recorders, it is claimed that the RAT will not cause any interference.

Signals are transmitted over a fairly wide angle and the RAT is said to operate at up to 30ft.

Contact: Cheetah Marketing, 24 Ray Street, London EC1. Tel: 01-833 4909.

BT software range

British Telecom are entering the software market with a range of computer games under the label Firebird.

Twenty titles are being released this month as part of the Firebird Silver range. Costing just £2.50 each, titled for the 64 are Mr Freeze, Booty, Exodus, Headache and Zulu — all arcade style games.

Two arcade games are being released for the VIC 20 — Snake Bite and Mickey The Brickey.

Richard Hooper, chief executive of British Telecom's Value Added Systems and Services, says: "In a market where quality and prices tend to be variable and complaints of misrepresentation frequent, Firebird software is setting new standards".

Future plans include the Firebird Gold range featuring premium titles priced and launched individually, and also educational and other types of programs.

Contact: British Telecom, 2-12 Gresham Street, London EC2. Tel: 01-357 3814.

Adventure

Games Workshop are to release a 64 version of adventure game, Tower of Despair, in November.

Described as a 'new challenge to adventure gamers', Tower of Despair casts the player in the role of the Warrior-Mage of Castle Argent with the task of destroying evil Malnor, Demonlord of Darkness, who is about to ravage the realm of Aelandor.

Retailing at £7.95, the game will include an adventure guide containing a history and map of the realm of Aelandor together with vital clues to the adventure.

Contact: Games Workshop, 27/29 Sunbeam Road, London NW10. Tel: 01-965 3713.

ZIM SALA BIM

Zim Sala Bim is a new scrolling graphic adventure for the 64 from Melbourne House. Russel Comte of Mugsy fame created the 3D scrolling graphics which are complimented by an exotic musical soundtrack.

Retailing at £9.95, the aim of the game is to retrieve stolen gold from the Sultan and return it to the elders of the village raided and pillaged by the Sultan.

A new colour-coding concept designed by Melbourne House enables the consumer to see at a glance which products are for which micros. (Commodore games are marked in red.)

Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond. Tel: 01-940 6064.

Hyper biker

PSS has released Hyper Biker for the 64.

A graphic representation of the popular cycle sport BMX, Hyper Biker enables up to four players to act out the more sophisticated manoeuvres associated with top quality bikers, such as wheelies, long jumps, high jumps and bunny hops.

Available on cassette at £7.95, control of the bike is via joystick or keyboard and track features include table top, whoop de doos, ramps, speed bumps, ditches and drop offs.

Contact: PSS, 452 Stoney Stanton Road, Coventry CV6 5DG.

CONTENTS

News 3
Interview 5
Reviews 7
Show Report 12
Sport Special 13
Listings 19
Competition 22
Charts 24
Results 27
Feature 30

From
GILSOFT
The Welsh Wizards Of Adventure

THE QUILL
THIS HIGHLY ACCLAIMED ADVENTURE WRITING UTILITY IS AVAILABLE FOR

48K SPECTRUM	COMMODORE 64	
CASSETTE £14.95	CASSETTE £14.95	DISK £19.95

ALSO OUR SUPERB SERIES OF ADVENTURES
THE GOLD COLLECTION
MINDBENDER - AFRICA GARDENS - SPYPLANE - BARSAC
DIAMOND TRAIL - MAGIC CASTLE - DEVILS ISLAND

AVAILABLE ON CASSETTE FOR BOTH THE SPECTRUM 48 AND COMMODORE 64 AT ONLY £5.95 EACH

DEALERS ASK YOUR DISTRIBUTOR FOR THESE AND OTHER PRODUCTS FROM OUR RANGE

WHOLESALE DISTRIBUTORS INCLUDE
MICRODEALER U.K., LIGHTNING, WEBSTERS
TERRY BLOOD, CENTRESOFT, PCS, DRAKE, TIGER
LEISURESOFT, R&R, TWANG, SOLOMON AND PERES

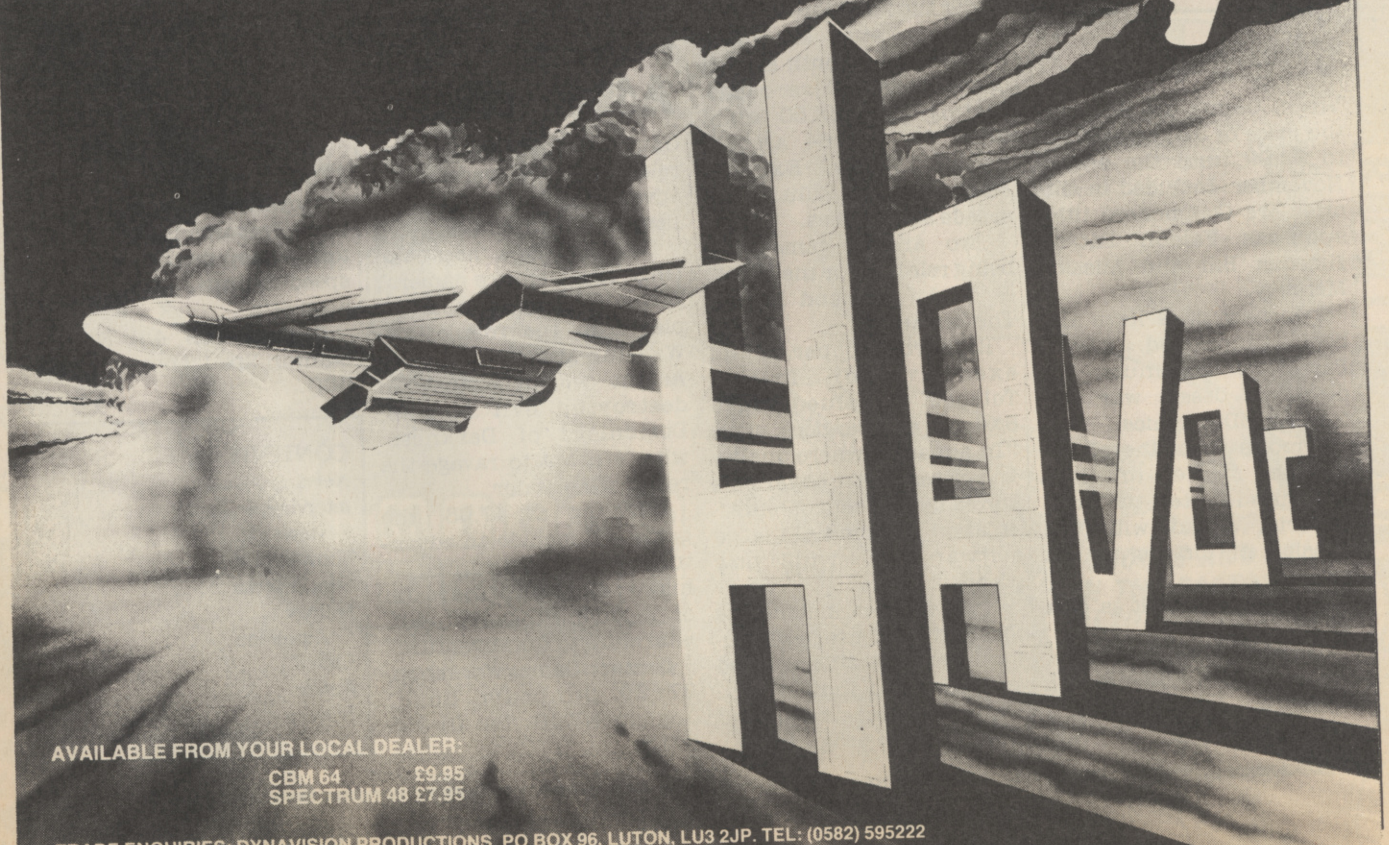
OR DIRECT FROM US

GILSOFT
30 Hawthorn Road
Barry
S. Glamorgan

☎: (0446) 732765

As I came to, I noticed a small table by the bedside. The room was bare and the door locked, there was no window. I had to escape.
MINDBENDER
THE MAGIC CASTLE
SPYPL
TEL.

EXPERIENCE THE STUNNING 3-D REALISM OF DYNAVISION



AVAILABLE FROM YOUR LOCAL DEALER:
CBM 64 £9.95
SPECTRUM 48 £7.95

TRADE ENQUIRIES: DYNAVISION PRODUCTIONS, PO BOX 96, LUTON, LU3 2JP. TEL: (0582) 595222

Computers– FASHION OR FUTURE?

Sally Wood talks to Martin Maynard, managing director of Audiogenic, and finds that he has some rather interesting and perhaps controversial views about the industry he has chosen to make a living in.

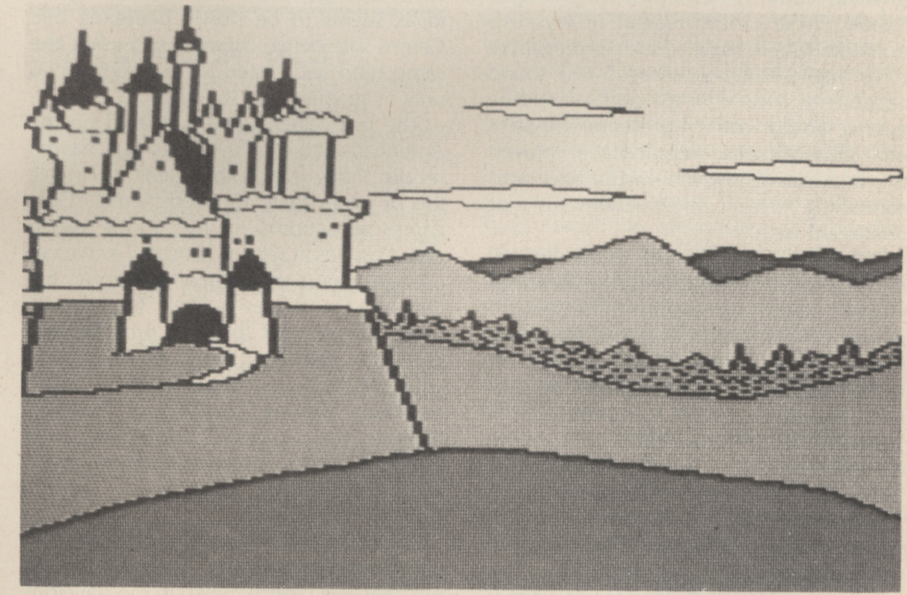
Audiogenic must be one of the oldest companies in the computer software business. CCI went along to Reading, the site of Audiogenic's factory premises, to talk to Martin Maynard about the company and his ideas about the business in general.

Audiogenic means faithfully reproduced sound and the name reflects the company's early beginnings as a recording studio where bands were managed and record deals carried out. After a few years, they branched out into cassette duplicaiton until Martin decided that "there was more to this than duplicating" and they started to program games for the Commodore machines. Mockaker Blitz for the VIC 20 was their very first game.

By 1981 they were producing software in earnest and last year's net profits came to about £100,000. Martin expects those figures to double this year.

Audiogenic have succeeded in an extremely volatile business field – that of computer software where so many companies have failed, Imagine and Rabbit being two of the most recent casualties.

Martin attributes some of the Audiogenic's success to "luck" and concedes that Audiogenic are probably "more experienced in understanding what the industry wants". He says: "It's a fashion business and fashions are changing all the time!" He continues: "These companies have failed because they didn't know what they wanted or what anybody else wanted, people want different things all the time – even in computers."

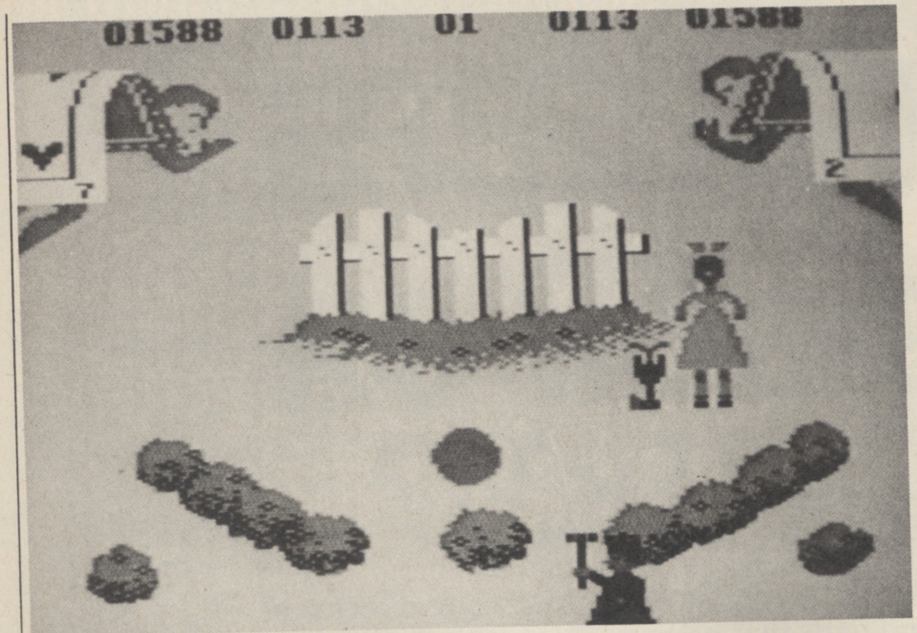


An illustration produced by Audiogenic's Koalapad

Software houses' precarious position will probably worsen. Martin believes that "computers are only just beginning to be consumer products" and are not yet a "true consumer item". Most consumer industries have to adapt to the everchanging fashions and fads of the public and the changes can be remarkably quick. A dress style or rock group can be the best thing since sliced bread one week and forgotten for ever the next!

Computers and software are on the threshold of being in the same position, but not quite yet. Martin believes that it is still the enthusiasts who own computers, "Everyone these days owns a video and a record player but I'm not totally convinced it will ever be like that for home computers, cliques are still involved."

"Home computers are just toys" he says. "The quality of software is going to have to be significantly improved before home computers ever rise above toy status." For instance, Martin regards educational software as being merely "a gimmick" with



Screen shot from Alice in Videoland

very little genuine "educational merit".

Technological advances in computers over the past few years have not been as great as could be expected according to Martin. "What is really needed" he says, "is a quantum leap in facilities such as megabyte rams, high resolution screens and sound capabilities. Even now the public could be getting fed up with the present computers and although some people have enjoyed the fashion until now, they might move onto something else if their interest is not revitalised soon."

However in the past, technological improvements in consumer goods have not always been successful. "The record industry in the 1960's and 70's enjoyed a boom, and then declined almost as soon as innovations such as digital records and laser technologies appeared!" Martin recalls.

Despite his sceptisism about the home computer market, Martin thinks that "computers will move on" and will creep "unobtrusively" into every home in goods such as fridges and cookers. "The microchip will evolve around us" he says.

"One area that is likely to improve is that of Communications" Martin thinks. Networks like Compunet, Prestel and Micronet will soon be in the home and "the house dweller will soon be dependent on those systems." Home shopping, banking and entertainment information will soon be available to anyone without leaving the house. "Home computers do have the capacity to become more than just games machines, but the possible applications will have to be developed and promoted."

Of course there have been tremendous changes in the industry over the last few years, the standard of games, their graphics and sounds have improved dramatically and as Martin confirms: "No company would produce a game of the standards existing two years ago, now!" However new game ideas seems to be slowly peetering out. Games are being churned out using the same tried and tested ideas distinguished only by graphics and sounds.

"The first Miner game appeared on the American market a few years ago" Martin recalls. "Now every other game is a Manic this or miner that!" He predicts that "Only games sensational enough to be talked about by kids at school will stand a chance.'

Programmers are tiring of games and the demand for utilities is likely to increase. Martin forsees that "business programs are going to become more popular" and considers that as "there are no more problems putting together a business package than a game" competition will force companies to start including software with their machines (Commodore already do so).

One of the most innocuous and seemingly unimportant inventions, the cassette has possibly been instrumental in the development of the home computer. It presents a convenient, safe and reliable means to store data for the user, although it has been overtaken by floppy disks and cartridges because of their superior memory and fast loading qualities. However not many computer owners own disk drives, Martin thinks only one in ten people do. Cartridges present the best means of storage, but the smaller software houses could not hope to produce the ten thousand at a time that would be needed to justify costs. Commodore are one of the few companies that can.

Martin considers the vertical pack density diskettes and compact audio disk (a record with laser engraved pits on the surface) to be alternative forms of data storage, although new computer designs would be needed.

Whatever Martin thinks of the industries future at the present, he is busily organising his products for the "massive Christmas" that he expects this year. More home computers are expected to be sold this year than at any other time and Audiogenic have a few new products to take advantage of the expected boom in Christmas shopping.

Swift, a home accounting program, combining word processing, budget accounts and a spreadsheet for under £50, Koalapad software – a printer routine and programmers guide and two adventure games, Magic Stone and Time Traveller are their newest products. In the future, Martin thinks that Audiogenic may concentrate more on peripherals and they hope to launch a mass storage device and the Gibson lightpen next year.

During the year, Audiogenic's games have been predominantly American. "Americans are a year ahead of us in the computer industry" Martin says, "But now the market has collapsed" and "the British and European markets have caught up and are now just as good if not better." Their two new adventures are from Holland. They do have a line of American software ready for release, but Martin felt "a bit cautious about putting them out!"

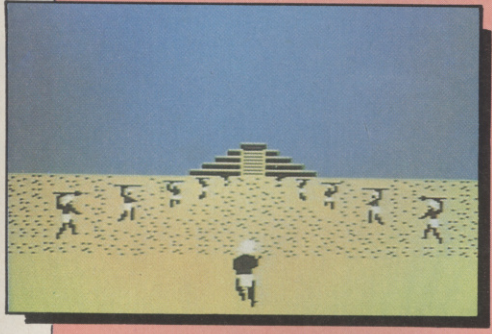
Audiogenic do not believe in having in-house programmers as in their experience, contracted ones produce better programs than those working from nine to five in the office. "They seem to thrive on working odd hours for days at a stretch" says Martin. "A comfortable secure working existance doesn't do them any good at all, they would do much better if they were on the breadline!"

On the software piracy front, Martin (a GOSH committee member) disagrees with current estimates of money lost through piracy. "People have greatly overestimated the losses" he says. "Audiogenic have lost money to large counterfeiting compnaies, but not on the scale people are quoting. There is no real solution, but I would like to see the authorities responsible taking more action in the software copyright legislation."

Martin concluded the interview with an opinion that since home computers came onto the market nothing immensely spectacular has happened. "What the industry really needed", suggests Martin, "is a Stephen Spielberg of computers to shake it up, inject enthusiasm, originality and innovation". A tall order, but you never know what might happen in an industry when nothing is certain except the fact that nothing is!

A sound choice

Sound can add considerably to the success of a game. Here we have selected a few games which we feel merit attention for the use they make of sound either through the inclusion of a speech synthesiser or purely effective use of music



AZTEC CHALLENGE

A test of endurance – an Aztec warrior must prove himself by running and jumping through a series of levels beset with danger. Using the joystick, the player guides the warrior through each of the seven levels – the gauntlet, stairs, temple, vermin, tiles, piranha and finally the bridge.

Dangers include falling spears, cracks in the floor, spiked tiles and piranhas. The graphics, colour and sound are excellent and the warriors hair rises every time he jumps. On each level the music changes and the size of the buildings indicates how advanced the warrior is in completing the level.

Once the player has successfully completed all seven levels he automatically goes onto the next phase of difficulty where the action is much faster. There are four phases in total. Two players can play and each level offers five lives, once the next level is achieved the game restarts at the same level. Aztec Challenge is as its title suggests an excellently challenging game.

Title: Aztec Challenge
Programmer: Paul Norman
Contact: Audiogenic Ltd, PO Box 88, Reading, Berks. Tel: 01-290 6044 or 0734 586334
Hardware: CBM 64, disk drive and joystick
Type of game: Arcade
Graphics: ****
Sound: *****
Playability: *****
Description: Aztec Warrior has to run and jump through seven levels avoiding traps and obstacles
Price: £8.95 (cassette) and £12.95 (disk)
CCI Rating: *****

TWIN KINGDOM VALLEY

Twin Kingdom Valley will satisfy any yearning for adventure you may have.

Featuring a speech-synthesiser the action takes place in a valley belonging to two kings. This mountainous mythical region is covered in forests and moors and is largely inhabited by strong elves, trolls with broadswords, witches, castle guards and assorted creatures such as bunnies, skinny squirrels and mice.

The computer gives you the possible directions and you key in which way you want to go and what you want to do with any objects that appear.

One of the most attractive features about the game is the graphics. Very colourful pictures with moving clouds and animals illustrate your whereabouts and in many cases offer vital clues.

Castles, dungeons full of bones, grates, secret doors, and magic lakes are just some of the 175 locations in the game. Treasures like crystal balls, jewelled crowns, bags of silver, lie all over the place and placing them in the Sword Inn will ensure their safety.

Weapons, jugs and other items also help you on your way.

However the rather aggressive valley occupants continually try to kill you. Helpful tip – a polite coward will do much better than a rude aggressive and brave adventurer!

We enjoyed playing this game, it's well constructed, colourful and full of surprises.

Title: Twin Kingdom Valley
Programmer: Trevor Hall
Company: Bug-Byte Ltd., Mulberry House, Canning Place, Liverpool L1 8JB. Tel: 051 709 7071
Hardware: 64 and cassette recorder
Type of game: Adventure
Graphics: ****
Sounds: Speech synthesiser
Playability: ****
Description: Roam around the valley collecting as much treasure as possible without being killed
Price: £9.50
CCI Rating: ****

TALES OF THE ARABIAN NIGHTS

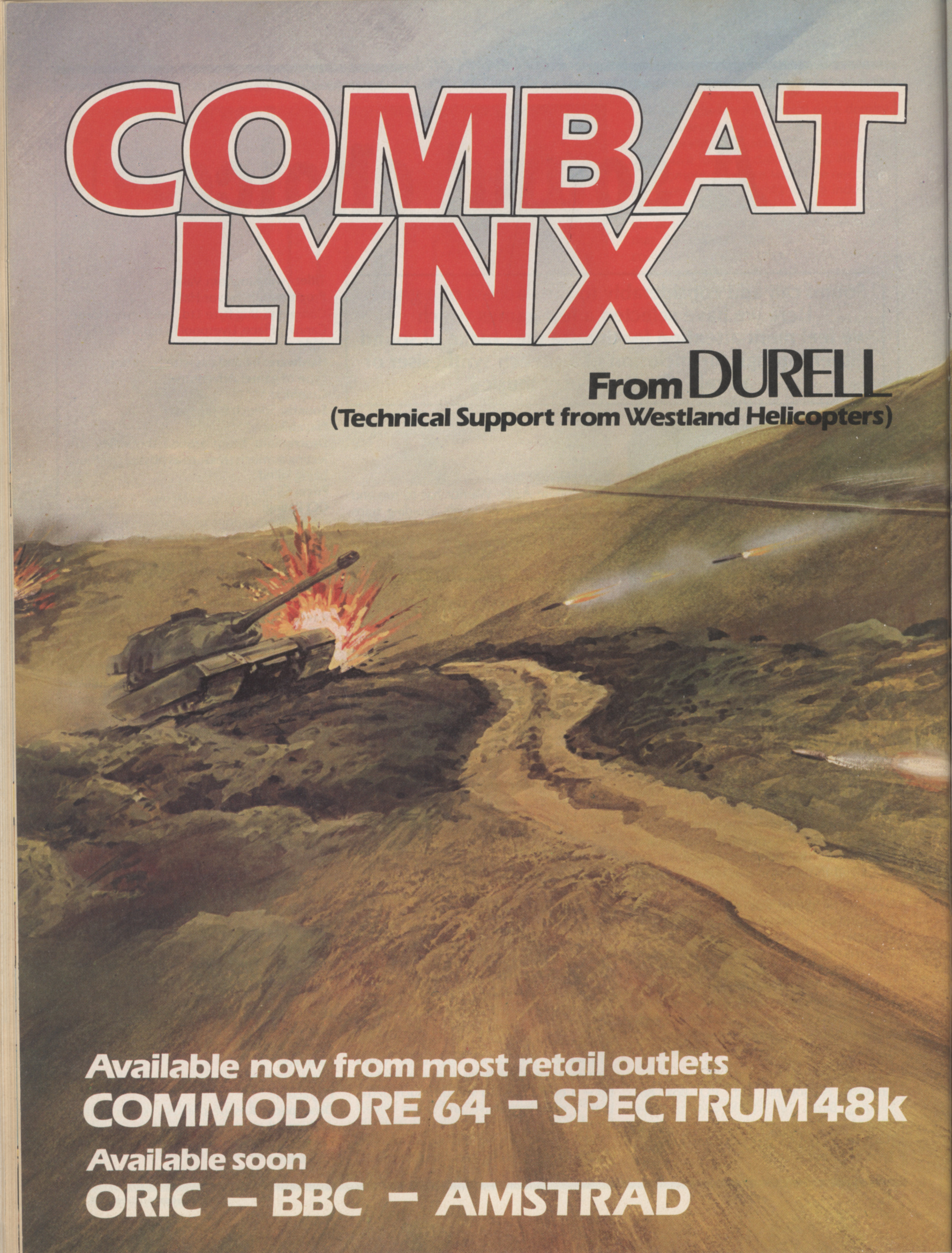
Sultan Saladin believed all women to be faithless and after he'd spent one night with a wife he had her put to death (charming)!

The beautiful Princess Anitra is next on the list and Prince Imrahil sets out to save her.

His quest begins on board a ship where he has to collect all the jugs spelling ARABIAN whilst avoiding octopi, cannon balls and Rocs. Next he negotiates a crocodile infested river and has to duck the rocks thrown by hostile nomads. Once in the underground cavern, mad genies make life very difficult, but with your brilliant arcade skills, Imrahil will have no trouble. His final act must be to grab Anitra and sail away on a magic carpet.

Tales of the Arabian Nights is challenging entertainment and uses the 64's graphics and sound capabilities well. The program also includes a voice synthesiser which introduces you to the game!

Title: Tales of the Arabian Nights
Programmer: Ian Gray
Company: Interceptor Software, Lindon House, The Green, Tadley, Hants. Tel: 07356 71145
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: ****
Sound: *****
Playability: ****
Description: Rescue princess Anitra in this Arabian adventure
Price; £7 (cassette) and £9 (disk)
CCI Rating: ****



COMBAT LYNX

From DURELL

(Technical Support from Westland Helicopters)

Available now from most retail outlets

COMMODORE 64 – SPECTRUM 48k

Available soon

ORIC – BBC – AMSTRAD

ARMY
DANGER

DURELL sales dept., Castle Lodge,
Castle Green, Taunton, Somerset, TA1 4AB

ARCHIPELAGO

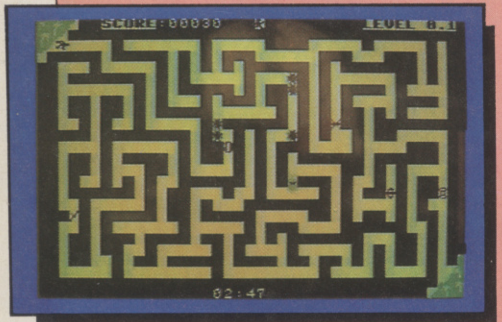
Lashed to a grating you somehow find yourself on a remote Pacific island completely alone. A storm rages around you – admirably shown with graphics in the opening screen shot of palm trees waving to and fro in front of dark stormy clouds.

Shelter appears in the form of a vast system of underwater labryinths linking the islands together. You jump inside the cave entrance and the real nightmare starts!

A maze forms to the sound of the Flight of the Bumble Bee by Rimsky Korsakov and the effect is absolutely brilliant. The best use of the 64's sound facilities that I have seen or heard.

Once in the maze, you are confronted by hordes of creepy hairy spiders who smell the man's presence and immediately head in his direction. Not only has the player got to guide the man through the maze to the next maze, he also has to collect five diamonds scattered at random. These have magic properties and while you can shoot the ever increasing tarantulas with your primitive energy lazer through these stones, they can't pass through.

If a spider gets to you, an amazing quantity of blood fills the maze. If they don't and you run out of time, the sea floods the maze and horrid devilfish give chase.



Altogether there are three levels of increasing difficulty and five mazes in each.

Archipelago is a super game in its own right, but with the excellent graphics and sound it deserves to do very well indeed.

Title: Archipelago
Programmer: Craig Renfrew
Company: Talent Computer Systems
Hardware: 64, cassette recorder or disk drive, joystick essential
Type of game: Arcade
Graphics: ****
Sound: *****
Playability: ****
Fast loader: Fast Burn
Description: Help the man to collect the diamonds, combat creatures and escape through all the mazes
Price: £7.95 (cassette) £9.95 (disk)
CCI Rating: ****

ROOTIN TOOTIN

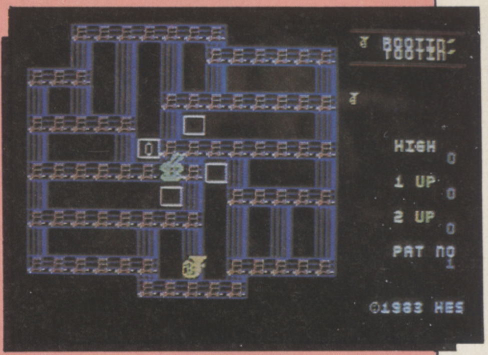
Rootin' Tootin sounds as if it's going to be a really happy fun game! But it wasn't, it was just another fairly ordinary arcade game played with weird musical instruments rather than Pac Men.

A Tuba is apparently trapped in a musical scale. It has the unenviable task of clearing away all the notes on one level and many levels afterwards to try and escape.

However, a mutated orchestra is after him and they appear in vast numbers from four boxes in the maze's centre. Besides avoiding them, which is difficult because they gang up and trap him, the only way to succeed is to blast the notes on the scale with the Tuba. The other method is to press the fire button and become temporarily invisible.

The pursuing hordes are worth points if eliminated. The pianha is worth the most at 800 and the more common Guitaro is only worth 200. Other participants include the Guitaro, Madphone, Trien and Cymbomb. Each one has its own peculiar way of trapping the tuba. The graphics are reasonably good, but the music let the program down. Good music would have transformed the game into something worth spending a few hours over.

There is a pause mechanism – useful if you want to leave the game in a tight spot and sup a wee dram of whiskey or perhaps tea. There are four difficulty levels and at least 21 mazes to play in.



Rootin' Tootin is an adaptation of a Japanese arcade game, but does not quite capture the excitement of an arcade game.

Title: Rootin' Tootin
Programmer: Bryce C. Nesbitt
Company: Hesware, Thorn EMI Software Company, Thompson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333
Hardware: 64, cassette recorder or disk drive, joystick essential
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ***
Fast loader: Turbo
Description: Escape from the scale by trapping musical notes with your tuba.
Price: £9.95 (cassette) and £27.95 (disk)
CCI Rating: ***

FLIP AND FLOP

A platform game with a difference – a very big difference actually! Flip, the kangaroo and Mitch monkey are desperately trying to escape captivity and you have to help them.

Suspended in mid air are a series of platforms joined together with ladders. On each platform there are marked squares and to make things a little tricker there are also some sticky squares. Flip starts and has to jump from square to square flipping over the marked ones. He can descend and ascend only by means of the ladder and one false move over the edge and precious life is lost (a bit like Q*Bert).

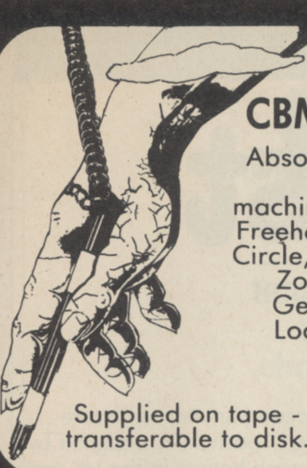
Next it is Mitch's turn and the whole platform appears upside down! Mitch has to swing from square to square. To successfully complete each level, all the marked squares have to be flipped over in a certain time.

Once the movements have been mastered it gets much more difficult because the circus keeper gives chase to the kangaroo and a wire cage follows Mitch. After five levels, the player is rewarded with a touching scene of the two friends visiting all their old circus buddies.

Subsequent levels get more difficult as the platforms increase and there are at least 25 levels.

The sound is good and the graphical illusion of the upside down platform is very clever. Flip and Flop is completely addictive and it is going to be a best seller for a long time to come.

Title: Flip and Flop
Programmer: Jim Nangano
Company: Statesoft. Tel: 0438 316561 ext.298
Hardware: 64, cassette recorder or disk drive, joystick essential
Type of game: Arcade
Graphics: *****
Sound: *****
Playability: *****
Fast loader: Fastload
Description: Help Flip and Mitch escape from the Circus
Price: £8.95 (cassette) and £10.95 (disk)
CCI Rating: *****



Light Pen CBM 64 or Vic 20*

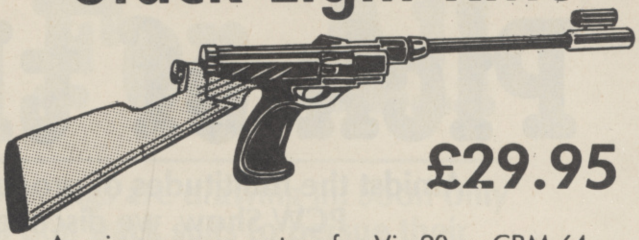
Absolutely the best....see opposite-100% fast machine code Featuring:- Freehand draw, Nib size, Circle, Box, Fill, Line, Text, Zoom, Animation, Put, Get, Save, Load, Print, Lock X, Lock Y and 10 Games.

*needs 16k

Supplied on tape - transferable to disk.

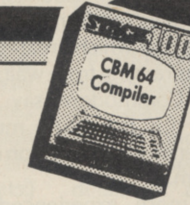
£28.00

Stack Light Rifle



£29.95

A unique game system for Vic 20 or CBM 64. Load one of the three games included and shoot the cowboys, rats, convicts etc on your T.V. from up to 10ft away. Complete full colour and sound effects.



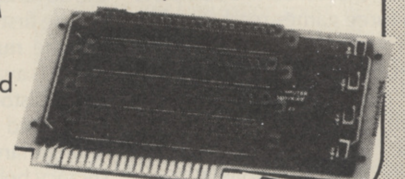
CBM 64 Compiler

Turns your normal basic programs into very fast machine language like code.

1. Disk Based with protection key	39.95
2. Disk Based with no key	19.95
3. Tape Based	14.95

4 SLOT Motherboard VIC 20 & CBM 64

A high quality switchcable expansion unit with gold slots enabling up to 4 compatible cartridges or RAM packs to be simultaneously inserted and turned on or off at will.



£38.00

CENTRONICS INTERFACE VIC 20/CBM 64

A very high quality strengthened cable (not flimsy ribbon) together with easy to use driver software on cassette (disk £5 extra) compatiable with Easyscript, Vizawrite, Simplywrite, Wordcraft and many others (but not all).

£24.00

RS 232 C INTERFACE CBM 64/VIC 20

A full Bi-directional interface for Printer, Plotter or modern connection. Provides standard D-type male connector compatible with any software which uses the serial port. Special cable service available if required. Full documentation.

£33.00

STACK 100
IEEE _488

IEEE-488 VIC 20/ CBM 64

This cartridge provides the standard CBM connector and enables all 3000, 4000 and 8000 series disk drives and printers to work with the Vic 20 or CBM 64. Supports normal CBM 64 commands

£60.00

ARROW C64

A Cartridge Giving:-

- * 7 times normal cassette speed for loading and saving
- * Machine Language Monitor
- * High Speed Tape positioning
- * Hexadecimal Calculator

at **£26.00**

STACK 100
ARROW PLUS C64

ARROW PLUS C64

All of the features of Arrow with the addition of Assembler and Disassembler facilities

at **£44**

HELP C64

This Cartridge is absolutley packed with terriffic routines and facilities:- 20 Additional Basic Commands, Printing Disassembler, Monitor, Disk Operating System Support,

all for only **£25.00**

SUPER HELP C64

This Cartridge features all of the commands of Help with the addition of a Full Symbolic 2 Pass Asssembler

at only **£35.00**

AUTOFIRE ADAPTOR CBM 64/VIC 20

Connects between your joystick and the computer and gives full autofire facilities. Now you can really Zap-em

at **£4.75** inc Vat

ZAP - PROOF JOYSTICK

Almost unbeatable, rubber feet, 2 fire buttons, great action quickshot look alike

£7.95

STACK 100

CUSTOMER INFORMATION CENTRE
290 - 298 Derby Road
Bootle, Liverpool L20 8LN
Trade enquiries: 051 933 5511
ask for Trade Sales

COMPUTER PRODUCTS

MIDDLESEX COMMODORE CENTRE

(Officially approved Commodore Home Micro and Business Systems dealers)

Vic 20 Starter Pack	99.95
Commodore 64 Computer	199.00
SX64 Portable + Software + MPS 801 Printer	795.00
Commodore 16 Starter Pack	129.00
Commodore Plus 4 Computer	249.00
MPS 801 Printer 50 cpc	199.00
CBM 1541 Disk Drive	199.00
CBM 1536 Data Cassette	44.00
WPS 802 Printer	345.00
MC8 801 Printer	399.00
DPS 1101 Daiseywheel	399.00
CBM 1542 Disk Drive	299.00
Juki 6100 Daiseywheel	399.00
CBM 1701 Colour Monitor	219.00
Centronics Interface	49.00
IEEE Interface	68.00
Hard Dust Cover from	6.95
Monitor Stands	10.95
Joysticks	6.00
Executive Carry Case	26.95

Microguide Keyplates	5.95
64/SK64 CP M Interface	49.00
Simsons Basic (Rom)	50.00
Kuma Basic N.C. (Rom)	49.00
Vizawrite W.P. (Rom)	79.00
Easyscript W.P. (Disk)	75.00
Zoom Pascal (Disk)	29.95
64 Intro to Basic Pt. 1	14.95
Stock Control (Disk)	34.95
Dialog Database/Mail Labels (Disk)	24.00

Send large S.A.E. for our comprehensive list of programming business, educational and recreational software.

We will be pleased to quote for any hardware + software package to meet requirements at a good saving.

*Open 6 Days Per Week or Reliable Mail Order Service. Special Package Prices

*Tax Free Exports To All Parts of The World

*Access · Barclaycard · Amex Diners Club Welcome

*Commodore 700 and 8000 series business systems supplied

SCREENS MICROCOMPUTERS

(A Division of Mayfair Computer Services Limited)
6 MAIN AVENUE, MOOR PARK, NORTHWOOD,
MIDDLESEX, ENGLAND.

TEL: NORTHWOOD (09274) 20664 TELEX: 923574 ALACOL G

Superbase 96

THE COMPLETE INFORMATION STORAGE AND CONTROL SYSTEM, SUPERBASE 96 TRANSFORMS COMMODORE MODEL 8096 OR 8296 INTO A FULL-FEATURED, PROFESSIONAL DATABASE SYSTEM! WITH UP TO 1100 CHARACTERS PER RECORD ON UP TO 4 SCREENS... AND UP TO 128 ITEMS PER RECORD, DEFINABLE AS KEY, TEXT, NUMERIC, CONSTANT, RESULT OR DATE... IN FILES OF UP TO 16M CHARACTERS! WITH SPREADSHEET AND CALCULATOR CAPABILITY, CALENDAR FUNCTIONS, MULTIPLE CRITERIA SORT AND SEARCH, EASY INPUT FROM WORDPROCESSOR/DATA FILES, BOTH MENU-DRIVEN AND PROGRAM OPTIONS, BATCH AND TRANSACTION PROCESSING, FULLY DEFINABLE OUTPUTS... SUPERBASE 96 IS ESSENTIAL IF YOU WANT THE MOST FROM YOUR COMMODORE! SUPPLIED ON 8050/8250 DISK, WITH EXCELLENT TUTORIAL/REFERENCE MANUAL. OUR PRICE ~~£454.25~~ £375.00!

Superscript II

SUPERSCRIPT II HAS ALL THE FEATURES YOU EXPECT FROM A PROFESSIONAL WORDPROCESSOR SYSTEM... AND THEN MORE! UNRIVALLED 240-COLUMN TEXT HANDLING, VARIABLE WIDTH SCREEN, FOUR-WAY SCROLLING OVER 2100 LINES, DOCUMENT LINKING FOR UNLIMITED CAPACITY, GLOBAL SEARCH AND REPLACE, FULL MEMORY CALCULATOR, ROW AND COLUMN ARITHMETIC, BACKGROUND PRINTING AND COMPLETE LETTER-QUALITY PRINT CONTROL MAKE SUPERSCRIPT THE ULTIMATE WORDPROCESSOR FOR THE CBM 8096/8296... AND IT SPELLS TOO! SUPPLIED ON 8050/8250 DISK. OUR PRICE ~~£454.25~~ £375.00!

Master

THE COMPLETE PROGRAM DEVELOPMENT PACKAGE FOR THE COMMODORE 8096/8296, USED BY BOTH NOVICE AND PROFESSIONAL PROGRAMMERS. MASTER ADDS 85 NEW COMMANDS TO BASIC INCLUDING 72K MEMORY MANAGEMENT, PROGRAMMER'S TOOLKIT, BUSINESS BASIC, KEYED DISK ACCESS, MULTIPLE SCREENS WITH USER-DEFINABLE INPUT ZONES, REPORT GENERATOR, 22-PLACE ARITHMETIC, DISK DATA COMPRESSION, DATE CONTROL, SCREEN PLOT, SCREEN DUMP, AND MORE... EVERYTHING YOU NEED FOR PROGRAMMING TO TOP PROFESSIONAL STANDARDS! WITH COMPREHENSIVE INDEXED USER MANUAL, QUICK REFERENCE CARD AND DEMOS. OUR PRICE ~~£339.25~~ £225.00!

*** WANT IT TOMORROW? *** CALL US TODAY! *** ON 01-546-7256

8032 TO 8096 UPGRADE	~~£345.00~~	£287.50	SUPEROFFICE 8096/8296	~~£799.25~~	£650.00
PM96 8096/8296	~~£114.53~~	£86.25	SUPERSCRIPT 4032/8032	~~£286.35~~	£225.00
VISICALC 8096/8296	~~£228.85~~	£195.50	SUPERSPELL 4032/8032	~~£172.50~~	£135.00
DTL COMPILER	~~£114.53~~	£109.00	SUPERSCRIPT 700	~~£517.50~~	£425.00
MASTER 700		£339.25	SUPERBASE 700	~~£517.50~~	£425.00

PRICES INCLUDE 15% VAT AND ARE CORRECT ON GOING TO PRESS. ORDER BY POST OR PHONE, USING CHEQUE, ACCESS/BARCLAY CARD OR OFFICIAL ORDER. DESPATCH IS BY SAME-DAY 1ST CLASS POST, PRE-PAID ORDERS FREE. PRODUCT DATA AVAILABLE ON REQUEST. REF A29

VISA

Calco Software

LAKESIDE HOUSE, KINGSTON HILL, SURREY, KT2 7QT. TEL 01-546-7256

OFFICIALLY APPROVED BY COMMODORE

EPROM PROGRAMMER MK3

This advanced version of our Mk.2 Programmer will program the popular industry standard 2516, 2716, 2532, 2732, 2564, 2764, and 27128 EPROMS. Disk-based software with all the essential functions for fast and reliable EPROM programming. 14 functions including Check-Empty, Program, Verify, etc; plus 6502 Disk Assembler and Assembler Hex-File loading (CBM or JCL Assemblers). With built in power supply and new custom case, this is the Programmer Commodore use at Slough! Price £299+VAT including 2716 personality card.

IEEE BUS-ADAPTOR FOR VIC 20 AND CBM 64

A superior adaptor at a reasonable price. This brand-new item allows you to use standard CBM/PET IEEE disk drives and printers with your VIC or 64. Many advanced features including:

- ★ MINI-DOS support
- ★ Batch file loading
- ★ Gold-plated edge connector for long term reliability
- ★ Selectable default device number for load/save
- ★ Multi-user bus sharing and simultaneous use of the serial bus.

Supplied with instructions detailing these features plus many more. Price £59+VAT.

OFFICIALLY APPROVED BY COMMODORE

JCL 700 WORKSHOP

Superb NEW cartridge for the CBM 700. Your programs will become faster, more reliable, smaller and much easier to write!

- ★ 10 TOOLKIT-type programming aids.
- ★ Bi-directional screen scrolling.
- ★ Enhanced BASIC with 39 new KEYWORDS.
- ★ Comprehensive data input systems with efficient File Interfacing.
- ★ DOS-SUPPORT available all the time.
- ★ ASCII-editor for text and assembler files.
- ★ Elementary word processing facilities.
- ★ BANK-SYS, Kernal in every bank.
- ★ Design and add your own BASIC extensions.
- ★ Extra RAM in system bank.
- ★ Comprehensive manual.

Available now, price £120.00 + VAT.

WORD PROCESSORS AND ASSEMBLERS FOR CBM 600/700

Please phone us for more details and prices for these products.

BUSINESS ROM

The BUSINESS ROM for 4000/8000 Commodore Machines adds 25 additional keywords to BASIC. Super screen management & input systems coupled with efficient easy-to-use relative file handling . . . and more. Includes DOS-support. Used by many major UK companies who require the best! Price £80.00 + VAT.

JCL SOFTWARE
47 London Road, Southborough,
Tunbridge Wells, Kent

Phone 0892-27454
for data-sheets or
contact your nearest
Commodore dealer.

PRODUCT NEWS

Storage

A 'unique' flip 'n' file disk storage system has been independently announced by two different companies.

ISA Gold's storage system caters for up to 15 5.25 inch disks. A fanned out easel position allows easy retrieval of disks without bending during selection. A perspex window allow the files to be visible even when the file is closed.

Other features include a hand grip, four anti-slip grips and a range of self-adhesive labels for indexing and archive filing. The product costs £5.95 (plus VAT).

ACS's Flip 'n' File system is available in three sizes. The Minibox takes 15 disks and there are two versions of the Keybox, which incorporate a double locking system, and hold 25 and 50 disks. Priced at £5.80, £25 and £35 respectively, the files are transparent low-static, smoke coloured material and include index dividers. For easy retrieval, the disks are presented vertically when the boxes are opened.

Contacts: ISA Gold, 80/84 Thornton Road, Bradford, West Yorkshire. Tel: 0274 306787.

ACS, Bowmaker House, Etruria Road, Hanley, Stoke-on-Trent. Tel: 0782 287121.

Budgetting and banking

Adventure game specialists, Richard Shepherd Software are entering the business market with the launch of the 64 Cash Controller.

Available on cassette (£9.95) and disk (£14.95), the program caters with three important areas of money management.

A bank account section allows for the storage of 400 transactions including standing orders.

An integrated budget section caters for sixteen budget headings, and expenditure is automatically coded through from the bank account section.

A loan and mortgage calculator calculates principal sum, rate of interest, period of loan or repayment details on the basis of the other three factors.

Data can be saved and is secured by the allocation of a password for each data file created.

The program is compatible with the Commodore MP 801 and 1526 printers and has facilities to provide printouts of statements, budgets, etc.

Contact: Richard Shepherd Software, Elm House, 23/25 Elmshott Lane, Cippenham, Slough, Berks. Tel: 06286 63531.

Adaptors

Letco, pioneers of the 64K memory expander for the VIC 20, have produced an adaptor (model 64KVA) to use with their 64KV memory expander on the 64.

When used on the 64, the addresses from $8000 to $9FFF will have eight separate blocks of 8K locations, each block selected by a single POKE instruction.

The adaptor costs $29.95 and the combination for use on the 64 costs $139.95.

Contact: Letco, 7310 Wells Road, Plain City, Ohio 43064.

Robot George

While not strictly a Commodore product, George the programmable robot will appeal to many computer enthusiasts.

Retailing at £23.95, George is a 16.8cm high robot with 48 programmable steps. He has three selectable gears and nine time intervals. George also emits a light beam and robot-like sound, and has a demo program to show off everything he can do.

Dressed fetchingly in grey, red and blue, George is more than just a toy, providing all the fundamental features of an expensive teaching system. Fully self-contained, he has an in-built microprocessor controller. Functions are programmed by a small keyboard on top of his 'head'. Traction and steering are provided by dual motors which drive rubber-tyred wheels and a built-in speaker and light, operated under control of the microcomputer.

George is suitable for children aged four upwards.

Contact: CGL, CGL House, Golding Hill, Loughton, Essex. Tel: 01-508 5600.

Megarule rules

The Megarule is a perspex magnifying ruler which makes the reading of computer listings very much easier. Placed over the text, it magnifies over 100% and in the centre is a guide line for accuracy.

Available clear or slightly tinted, the Megarule costs £2.99.

Contact: Dealer Deals, 20 Orange Street, London WC2. Tel: 01-930 1612.

Shaping up

Hewson Consultants have secured a contract from the Longman publishing group to supply an exercise planning program.

Called Shaping Up, the program was designed for use with the 64 and features an on-screen demonstration of exercises tailored to the individual user's requirements.

Shaping Up is being marketed in conjunction with the magazine, Successful Slimming.

Contact: Hewson Consultants, 56B Milton Trading Estate, Milton, Abingdon, Oxon.

New idea

'The Practical Guide for People with a New Idea' explains how to protect a new idea, product or scheme and exploit it to the full.

Areas covered in the book include market research, approaching a manufacturer, telling the world about an idea without losing your rights, patenting an invention, secret patents, checking an idea is original, patent cost and life span. Also information about copyrights, designs, trademarks and licences.

It costs £5.95.

Contact: The Patent Eye, George House, George Road, Edgbaston, Birmingham.

PRODUCT NEWS

Colours

Fashion conscious micro owners can now buy a colour monitor in a livery to match their computers.

A range of colour cabinets has been launched by Compuser for their medium resolution monitor, the Professional 2000, Commodore's colours being two-tone grey. The monitor features a black face anti-reflection faceplate. It has RGB linear input and is also available in RGB/TTI.

The retail price is £325.

Contact: Compuser, 27 Vulcan Way, New Addington, Croydon, Surrey. Tel: 0689 46116.

Brochure

All you ever wanted to know about word processing but were afraid to ask can now be discovered in a free illustrated eight-page brochure published by Dataview Wordcraft.

Focusing on Wordcraft software, the brochure explains what word processing does, hardware and software, how it can save or make money, and how it makes life easier for the user.

Contact: Dataview Wordcraft, Radix House, East Street, Colchester, Essex. Tel: 0206 869914.

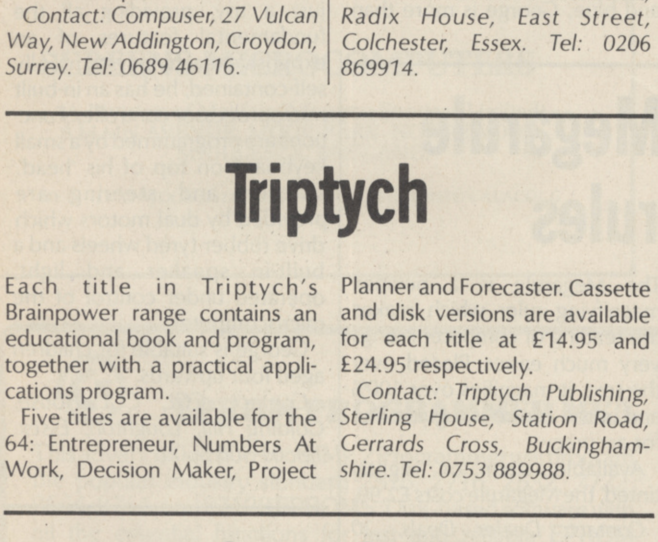
Triptych

Each title in Triptych's Brainpower range contains an educational book and program, together with a practical applications program.

Five titles are available for the 64: Entrepreneur, Numbers At Work, Decision Maker, Project Planner and Forecaster. Cassette and disk versions are available for each title at £14.95 and £24.95 respectively.

Contact: Triptych Publishing, Sterling House, Station Road, Gerrards Cross, Buckinghamshire. Tel: 0753 889988.

Interface Adapter



Access Computer have developed a combined Serial Interface and Cable to printer. Designed for use with most RS232 Serial printers, the unit is supplied with simple instructions and is available by mail order for £34.95.

Contact: Access Computer Company, The Computer Centre, 61 Shaw Heath, Stockport, Cheshire. Tel: 061 477 6013.

Clean up

Bib
COMPUTER CARE KIT
DUST AWAY
COMPUTA-CARE
KLEEN SCREEN

A range of computer care products from Memorex includes: VDU and TV screen cleaning kit comprising cleaning tissues and two anti-static cloths, at £4.95; case and keyboard cleaning kit, also at £4.95, comprising aerosol spray foam, cleaning cloth and cotton buds; disk drive and head cleaning kit with 10 disposable head cleaners and aerosol spray cleaner for wet and dry action, costing £9.95; and a storage case of 5.25 inch floppy disks, costing £2.25.

Bib have also produced a Computer Care Kit comprising Audio cassette head cleaner with cleaning fluid, air duster for cleaning dust and dirt away from keyboard and printer, together with anti-static screen cleaning fluid with cleaning. The kit costs £8.74.

Contacts: Memorex, Memorex House, 96/104 Church Street, Staines, Middx. Tel: 0784 51488.

Bib, Kelsey House, Wood Lane End, Hemel Hempstead, Herts. Tel: 0442 61291.

Light pen

A light pen package for the 64 is now available from Stack Computer Services. Costing £28, it comprises a light pen, a comprehensive user manual, two demonstration cassettes containing nine games, and Stack's new paintbox draw software.

Stack's new dustcovers comply with anti-static and fire resistant regulations with costs varying from £1.50 to £5 according to machine size.

Also new from Stack are three basic compilers for the 64. These vary from £14.95 on cassette to a security key version at £39.95.

Contact: Stack Computer Services, 290/298 Derby Road, Liverpool. Tel: 051 933 5511.

Lightning strikes!

Oasis Software have launched three 64 games writing utilities, all available on disk and cassette.

Basic Lightning is an extended BASIC with more than 200 extra keywords. A cassette version costs £14.95 and the disk, £24.95. White Lightning (cassette £19.95, disk £29.95) includes the BASIC Lightning package and produces very fast stand alone machine code programs.

Machine Lightning (cassette £29.95, disk £39.95) is a Macro Assembler/Monitor.

Contact: Oasis Software, Alexandra Parade, Weston-Super-Mare, Avon. Tel: 0934 419921.

Drive faster!
commodore
1541
1541 EXPRESS
commodore

There's nothing worse than waiting for your program to load. And good though the Commodore 1541 is, speed isn't exactly its biggest feature.

Hook up the new 1541 Express from RAM, though, and you'll be up and running like lightning.

This ingenious add-on speeds up data transfer from the 1541 and new 1542 disk drives to your Commodore 64. So much so, that you'll wonder how you ever found the patience to wait before.

With the Express you can load programs in a third of the normal time. That means less frustration and less time wasted.

(You can fit it yourself in minutes, too – and disconnect it just as easily).

The new 1541 Express from RAM.

To shift your drive into top gear call into your nearest dealer today.

Or call our credit card hot line on 02514 25252. (Access and Visa welcome).

Or complete the coupon below and send it today to:

Dept CCI, Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet,
Hampshire, GU13 8PA.

24 Hr despatch for credit cards and postal orders.

Please send me:

_____ 1541 Express High Speed Disk Loading Cartridge(s) at **£49.95.** + *£1 p&p (overseas orders £3 p&p)*

I enclose cheque/postal order or charge Access/Visa for £ _______

VISA ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Name _______________

Address _______________

_______________ Post Cd. _______________

Tel. _______________

To: Dept CCI Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU13 8PA.

Trade and export enquiries welcome.

Package deal from CBM

Commodore's 8296D is now being sold complete with over £865 worth of software.

This software comprises three packages: SuperScript, a word processing package including Spelling Checker; The Manager, a comprehensive database and file management package; and Calc Result, a financial planning spreadsheet.

"No other machine in the price bracket offers as much floppy disk storage capacity as the 8296D," says Mark Horne, Commodore UK Business systems product manager. "When coupled with free applications software, we believe the machine offers unbeatable value for money."

The 8296D offers 128K memory, high resolution graphics with 80-column 25-row green-phosphor integral screen, four screen page-switching and compatibility with a range of printers – from a 60 cps dot-matrix printer to a 40 cps letter-quality printer. Using Basic 4.0, the 8296 range have a detachable, full-size Qwerty keyboard with separate numeric keypad. Styling includes swivel/tilt on the monitor and programs can optionally display information in high resolution.

The entire package is sold for £1,690 (excluding VAT) and includes the 8296D with integral 2 Mbyte floppy disk drive, 128K RAM, monitor, keyboard and wordprocessing, financial planning and database software.

Contact: Commodore, 1 Hunters Lane, Weldon, Corby, N. Hants. Tel: 0536 205555.

Software directory

Over 5,000 software packages are contained in the latest edition of Microcomputer Software Directory.

Business management software has been one of the largest growth areas over the last nine months, showing an increase of 130% over the 1983 Directory. The number of business and commercial packages available in the UK, including word processing and integrated business systems, grew by 108% over the year with there now being some 400 packages in this category.

In addition to business applications, the Directory addresses a further two fast-growing sectors of the microcomputer software industry – education and games.

The Microcomputer Software Directory costs £40 plus £2.20 p&p.

Contact: Computing Publications, Evelyn House, 62 Oxford Street, London W1. Tel: 01-323 3211.

Unisoft

Unistat is a statistical package for the 64 from Unisoft. Features include Multivariate regression; analysis of variance, scatter diagrams and time series plots; statistical tests, correlation coefficients and probability distributions; descriptive statistics, frequency distributions and histograms.

Available on disk or cassette, Unistat costs £85.

Also available from Unisoft is Unimax, a linear programming package capable of handling all sorts of linear programming problems. Matrix operations include inversion, transposition, determinant, pre and post-multiplication, scalar multiplication, addition and subtraction of matrices and vectors. Matrices can be saved and loaded at any stage.

Available on disk or cassette, Unimax costs £60.

Contact: University Software, Dept C, St Peter's Street, London N1. Tel: 01-359 0978.

Audiogenic

Audiogenic have launched the Professional Range of business software for the 64. Supplied on disk, the three packages cover all business applications.

Wordcraft, at £24.95, is a disk version of the Wordcraft word processing system for the CBM Business range of computers. Swift is a spreadsheet facility retailing at £19.95. It provides features normally associated with expensive, desk-top micro packages.

Magpie, at £39.95 is a data base system. A range of modules, each costing £14.95, is also available covering areas such as sale account, mail lists and invoicing.

Contact: Audiogenic, 39 Sutton Industrial Park, London Road, Reading, Berks. Tel: 0734 664646.

Good news!

Bubble Bus Software have taken over the marketing of business products from their offshoot, the Computer Room.

Supernews, a delivery and accounting system for newsagents is the first package to be marketed. This Commodore approved product is available for the 64 and 8000 series and costs £499 (excluding VAT).

It caters for up to 3000 deliveries, produces rounds lists, accounts, and pre-order requirements.

Contact: Bubble Bus Software, 87 High Street, Tonbridge, Kent. Tel: 0732 355962.

Ledger

Kemp have launched Purchase Ledger for the 64. A ledger accounting program for recording and analysing purchases, Purchase Ledger is menu-driven and costs £27.95 for the cassette version and £29.95 on disk.

Up to 100 creditor accounts and 50 nominal accounts are catered for and the program has a full range of print-out. It can be used with Centronics interfaces and comes complete with a 16-page manual.

Contact: Kemp Ltd, 43 Muswell Hill, London N10. Tel: 01-444 5499.

Computer trolley

In adition to a standard range of tray sizes, Bulldog Computer Services are offering VDU trolleys which can be custom built to suit any size and make of computer.

Supplied with a length of flexible conduit and fixing clamp to ensure that the interface and power cables are kept together, each unit is equipped with lockable castors.

Bulldog trolleys are available on 30 days approval.

EME offer a choice of trolleys with two shelf levels. Model 2225/Primary with an overal height of 842mm and a lower shelf height of 610mm costs £54.95 (plus VAT). Model 222/Secondary, at £56.95 (plus VAT), has an overall height of 892mm and lower shelf height of 660mm.

Finally, Servicon Dynamics have developed a stand which gives the illusion that the monitor is floating. The stand utilises a counter balance system allowing the fulcrum for the swivel/tilt mechanism to be positioned at the rear of the monitor. The user positions the monitor at the required angle and direction and it stays there.

Contacts: Bulldog Computer Services, 33 Hinkley Road, Sapcote, Leicester. Tel: 045527 2329 (or enquiry Hotline – 045527 4575).

EME, 70 West End Road, High Wycombe, Bucks. Tel: 0494 26508.

Servicon Dynamics, 186/190 Cirencester Road, Charlton Kings, Cheltenham, Glos. Tel: 0242 528213.

BUSICALC 3

- the sophisticated spreadsheet !

Easy to learn, easy to use - something that can't be said of many business programs. But it's true of all the programs in the BUSICALC series.

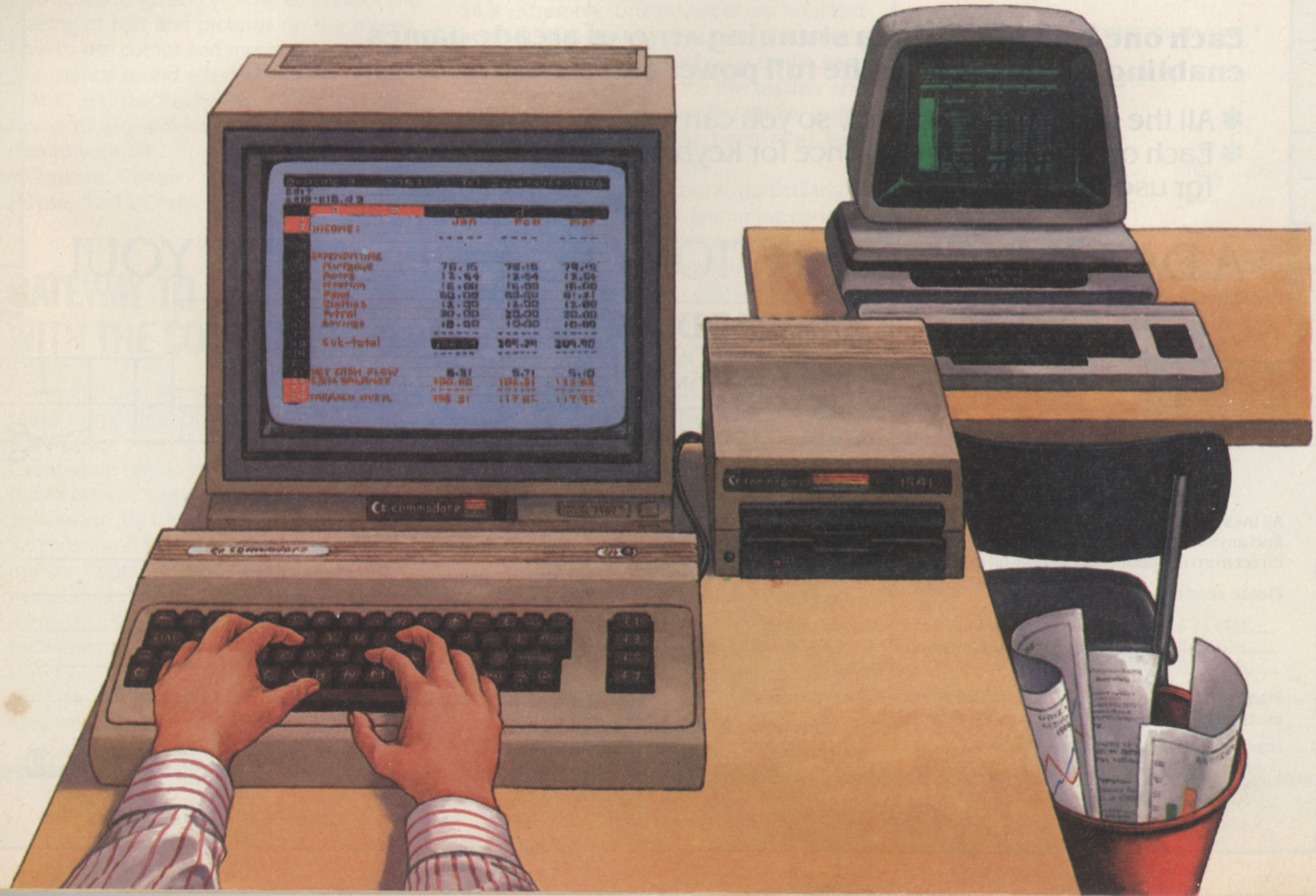
BUSICALC 3 can handle all sorts of jobs - budgets, expenditure analysis, stock lists, price lists, and product costing are just a few of the possibilities. Three-dimensional formulae automatically access data stored on disk, so that you can easily pull together information from several different sheets and summarise or manipulate it.

It's simple to transfer data to other programs such as Easy Script. And you can use virtually any printer with BUSICALC 3, whether dot matrix or daisy wheel, Commodore or non-Commodore.

For the CBM 64 and PET/CBM 4000 & 8000 series.

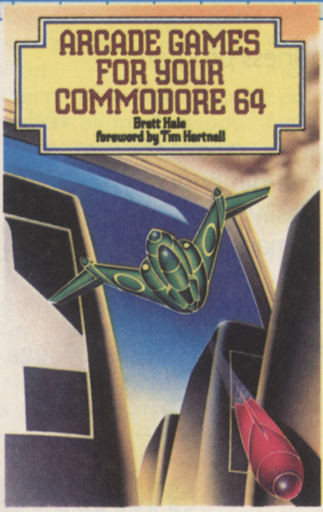
Available through dealers or from:
Supersoft, Winchester House, Canning Road, Harrow HA3 7SJ

Phone 01-861 1166 for more details and a free catalogue.

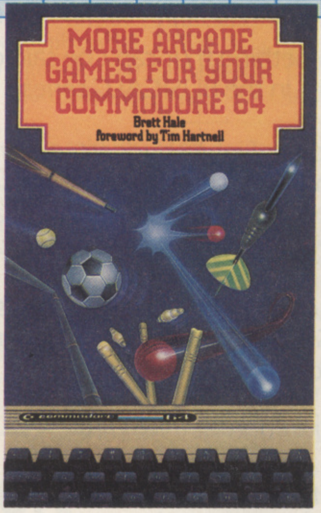


STOP!

YOU OWN A COMMODORE 64 OR VIC 20, BUT ARE YOU MAKING THE MOST OF IT?



ARCADE GAMES FOR YOUR COMMODORE 64
Brett Hale
foreword by Tim Hartnell



MORE ARCADE GAMES FOR YOUR COMMODORE 64
Brett Hale
foreword by Tim Hartnell

ARCADE GAMES FOR YOUR VIC20
Brett Hale
foreword by Tim Hartnell

YOU SOON WILL BE, WITH ONE OF THESE BOOKS FROM CORGI/ADDISON-WESLEY!

Each one is packed with a stunning array of arcade games, enabling you to explore the full power and potential of your micro.

- ✻ All the games are in BASIC, so you can modify them however you want
- ✻ Each one is listed twice – once for keyboard use, and once for use with a joystick

A DAZZLING SELECTION OF GAMES AWAIT YOU!

CORGI/ADDISON-WESLEY
TOGETHER,
THE NEW FORCE IN COMPUTER BOOK PUBLISHING

All these books are available at your bookshop, though should you find any difficulty in obtaining them, they can be ordered direct from the publisher. Simply fill in the form below.

Please send me

____99124 4 Arcade Games for your Vic 20 at £4.95 (128 pages)
____99125 2 Arcade Games for your Commodore 64 at £4.95 (128 pages)
____99127 9 More Arcade Games for your Commodore 64 at £4.95 (128 pages)

Please allow cost of book(s) plus 30p for one book plus 15p for each additional book for postage and packing.

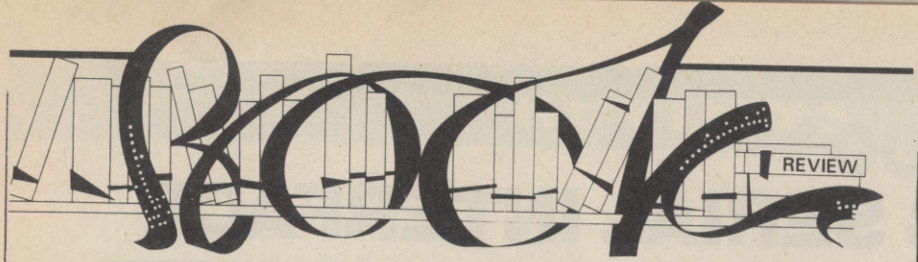
I enclose my cheque/postal order for £________
payable to: TRANSWORLD PUBLISHERS LTD.

(IN BLOCK CAPITALS PLEASE)

Signed________________________Date__________
Name____
Address______________________________________
____
____

Now send to **CORGI/ADDISON-WESLEY BOOKS,**
61-63 Uxbridge Road, London W5 5SA

Ⓑ



THE REALLY EASY GUIDE TO HOME COMPUTING — COMMODORE 64

Now here's a book that really lives up to its title. Aimed at the complete beginner, it's a large format book packed with cartoons illustrating almost every move you make. The 'Magic Micros' Mike and Rose guide the reader through his or her introduction to all the concepts central to programming in BASIC on the 64. Extra guidance to the positioning of keys is provided by Inspector Key and his dogs!

Two mothers, Sue Beasley and Ruth Clark, are the authors of this book and they manage to capture the attention of the youngest reader in a way that will also amuse and interest older readers.

It is a book to be read from the start to finish rather than a reference guide to be dipped into, with each chapter offering 'extra things to do'.

With the aid of Mike and Rose, the reader soon learns how to use all the facilities of the keyboard, how to create a program and make it work, together with editing, program control, simple loops and numeric variables, and how to understand syntax errors and report codes. In addition to this, instruction is given on how to control the placing of text and pictures on the screen, how to use colour and movement and how to produce sound effects.

At £7.95, The Really Easy Guide To Home Computing is a clear and concise introduction to your 64.

Contact: Century Publications, Portland House, 12-13 Greek Street, London W1.

GATEWAY TO COMPUTING WITH THE COMMODORE 64

"Learning is fun" is the message put across by many computing books aimed at the first-time user. Ian Stewart's Gateway to Computing enforces this idea with programs concerning colourful characters such as Carlton Q Cashsnitcher, the Gnatwest Bankager and Ivan Nokyablokov, spy with a mission. Not to mention his groan a minute humour and the resurrection of ancient jokes such as "Do you know the difference between an elephant and a letterbox?". However, all this is relevant to the book's aim to introduce the reader to the fundamentals of computing.

Most introductory computer books assume that the reader has already switched on the computer. Ian Stewart assumes total ignorance, explaining how to set up a computer and advising a suitable and comfortable layout of equipment.

After 'making friends with your computer' consecutive chapters lead the reader further into the world of BASIC programming. Diagrams, cartoons and listings reinforce and illustrate the text throughout the book.

'Towards the end of the books, the author explains in more detail how the computer works and also provides a glossary of terms and a commands and symbols index.

The only fault some parents might find the Gateway to Computing (which retails at £4.95) is that it may enforce such phrases as 'get stuffed' and 'no sweat' into a child's vocabulary!

Contact: Shiva Publishing, 64 Welsh Row, Nantwich, Cheshire CW5 5BR.

KIDS AND THE COMMODORE 64

Only an American book could begin with a list of acknowledgements filling a whole page. Even Aunt Mildred and Rover the dog get a mention (well almost!)

Written by Edward H Carison of Michigan State University, Kids and the Commodore 64 is extremely reminiscent of a school text book despite the use of cartoon illustration.

Although intended for home study, each chapter contains notes for the teacher and questions to ask the class. The reader is also tested on what has just been read with space left to fill in answers.

At some points of the book, particularly at the very beginning, a programming concept is thrown in without any explanation. For Example: before programming is even mentioned, the reader is advised to POKE 53281,0 to get a black screen. The result will be achieved, but the reader won't know how or why this has happened. Another grumble, which is probably purely personal, is that some of the text made me cringe. A couple of examples: "...the computer may get sick and you will have to turn it off, then on, to make it well." "The flashing cursor is like the computer snoring." Yuk! At the pricely sum of £19.95, it is arguable whether the reader benefits more from the 'school book' approach than from the 'learning is fun' end of the market. It's probably a matter of taste, but I'm sure most beginners would choose to steer clear of anything reminiscent of school.

Contact: Prentice/Hall International, 66 Wood Lane End, Hemel Hempstead, Herts.

Do you feel your spare time, your skills and your computer could be put to better uses than just simply playing games? If the answer is "yes", and you can tick a further "yes" from the questions below then we offer you

£000's REWARDS

Would you like to write programs for business applications? Yes No

Can you write machine code programs Yes No

Would you like to debug or improve someone else's programs? Yes No

One of our major projects is a trading system for commodity prices, involving mathematical analysis, and offers the biggest rewards... Would you eventually be willing to learn more about the commodity markets and existing systems? Yes No

Another project that concerns only the gathering and inputting of data. This will be on a royalty basis and a program will be provided by us. Would this interest you. Yes No

Do you possess some utility/business programs or applications you wrote yourself or acquire commercially? Yes No

If yes please give details: . . . .

Please state makes, models and storage capacities of your

Computer(s) . . . .

Disk drive(s) . . . .

Cassette Yes No

Graphic Plotter Yes No

Printer Yes No

Modem Yes No

Sundry items that might be of interest (Eprom prgmr etc)

Do you belong to a computer club Yes No

Name(Mr/Mrs/Miss) . . . .

Address . . . .

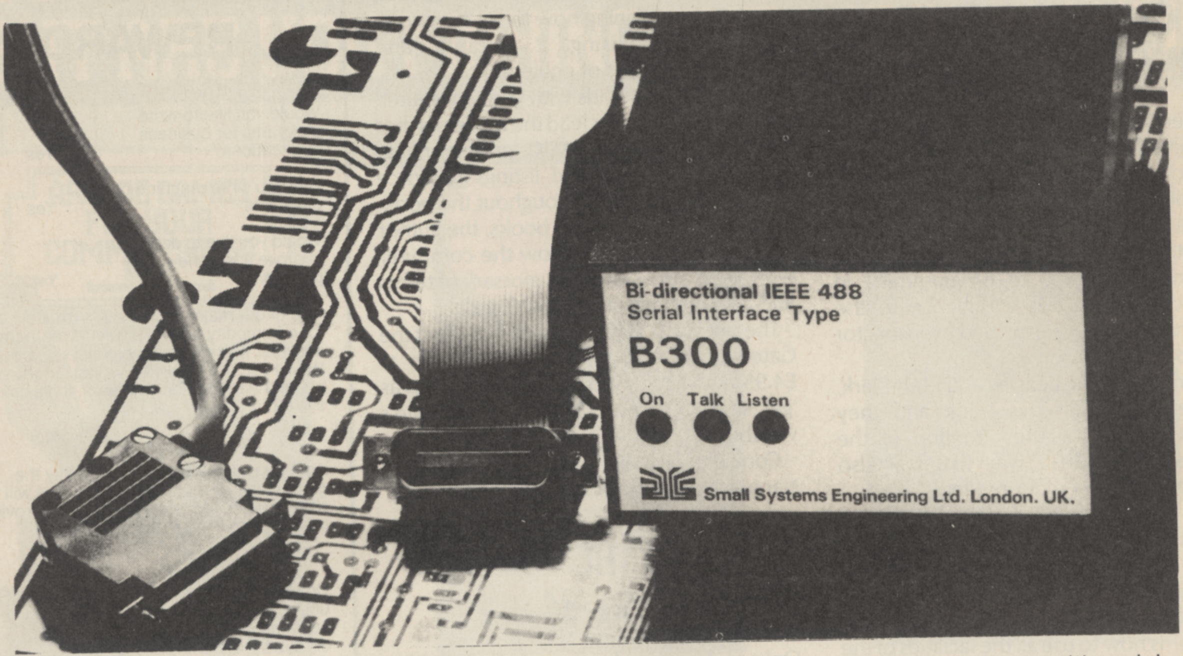
Phone No . . . .

Please post without delay to

AURAC LTD

1a Queen's Gate, London SW7 5EH

TYPE B300
IEEE-488 SERIAL INTERFACE



The B300 interface is a bidirectional unit which enables IEEE-488 controllers to communicate with serial devices such as KSR terminals, modems, laboratory instruments and other computer systems. The B300 replaces the SSE type B and B200 bidirectional interfaces. It is fully compatible with both earlier units in that it incorporates both software selectable and switch selectable Baud rate control. This flexibility has been achieved by designing the unit around an 8748 single chip microprocessor. The 8784 also provides a 40 character input buffer which provides flexibility in handling high speed data input.

Specification
IEEE-488 functions: Source Handshake (SH), Acceptor Handshake (AH), Talker (T), Listener (L) and Extended Listener (LE).

Switch selectable options
Parity—ODD/EVEN
Parity—Enable/Disable
Baud Rates—110, 300, 1200, 9600
Talk Addresses—4, 5, 6, 7
Listen addresses—4, 5, 6, 7
Code Conversion—Mode A/B
No. of Data Bits—7/8

Software selectable options
Baud Rate selection using a secondary listen address followed by a configuring byte which sets input baud rates. 16 different baud rates in the range 50-19,200 baud can be selected. Input and output baud rates can be set to different values.

RS232C signals
Transmitted Data, Receive Data, Request to Send, Clear to Send, Data Terminal Ready.

Connectors
IEEE-488 lead—24 way male ribbon connector. Female 24 way ribbon and an edge connector to fit PETs IEEE port supplied as options.
RS232 lead—25 way D-Type connector (male or female).

Packaging
The B300 is housed in a small instrument case with integral power suppies. ON, LISTEN and Talk indicators are provided on the front panel.

Options
20mA opto-isolated current loop adapter mounted in a D-type connector shell which provides active or passive current loop 10.
Communications PROM—designed to optimise the B300's performance with the INTERCOMM general purpose asynchronous communications package.

Warranty
90 days against defective workmanship or component failure under normal operating conditions.

Prices

B300	£186.00
Current Loop Adaptor	£25.00

small systems engineering limited

2-4 Canfield Place, London NW6 3BT. Telephone: 328 7145 Telex 264538

Adventurers aid

Programmer Duncan Gamble looks at four recently-released packages including The Quill, an adventure writing package from Gilsoft.

THE QUILL

"an excellent utility"

The Quill is effectively a database within the framework of which the user enters data and conditions which combine to produce an adventure game. The final runtime code is separable from the compiler and manufacturers Gilsoft make it known that the runtime code can be used, with a statement of acknowledgement to the quill, by adventure writers for their own games for sale. A measure of how successful this has been can be gained from the number of adventures now available written under The Quill.

The Quill allows good adventure creators who are not good programmers to exploit their skills without being handicapped by having to write a Basic or Machine code program with which to express their creations. The adventure must first be thought up, with maps, objects and problems. This is then entered in the editor by location or by object number. Text and replies to inputs must be entered as must conditions for events. To control the flow of the adventure, 32 flags are available. 1-10 are predefined by the interpreter for the usual requirements of an adventure — whether it's dark, how many times a command is entered, how many times a location description is used. Some flags depend on whether object number 0 is present or absent. This object can be used for a torch or lamp as some other flags depend on whether it is dark or not and whether this object is present.

The manual is informative and concise — for such a powerful package it is of needs quite lengthy but is well structured and includes appendices of error messages generated by the editor and interpreter and a list of quill commands.

The quill language itself is very simple but adequate for describing adventures. The manual contains several example routines showing implementation of such usual adventure features as hunger and opening locked doors. Some words are predefined by the interpreter such as load, save, end. These are needed by all adventures so to save space they are in the run-time system itself. For adventures with a random element Chance produces a number between 1 and 100.

The Spectrum origins of the Quill are shown in Ink, Paper and Border colour commands. If sound is required a SID command pokes a register number with a value, this is enough to make purists rattle their spears and bang their shields in distaste, but sound can convey an atmosphere as much as any text.

Do not expect to write adventures as sophisticated as Lords of Time or the Hobbit, but adventures far better than many of those on the market now can be produced with this excellent utility.

Contact: Gilsoft, 30 Hawthorn Road, Barry, S Glamorgan. Tel: 0446 732 765.

THE COMPLETE MACHINE CODE TUTOR

"results can be spectacular"

6502 Machine code is not the easiest computer language to master, but it is worth

VIZASTAR 64

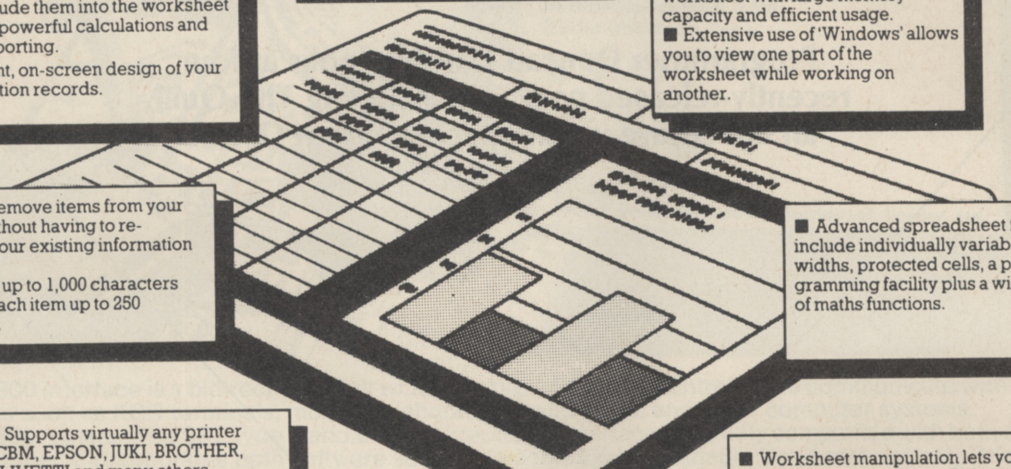
THE INFORMATION PROCESSOR

■ Spreadsheet ■ Database ■ Graphics

■ One word menu lines for easy selection of facilities.
■ The high resolution grid pattern frames the worksheet giving an easy-to read display.

■ Extract from your information files and include them into the worksheet for fast, powerful calculations and easy reporting.
■ Instant, on-screen design of your information records.

■ A 1000 Row by 64 Column wide worksheet with large memory capacity and efficient usage.
■ Extensive use of 'Windows' allows you to view one part of the worksheet while working on another.



■ Add or remove items from your records without having to re-construct your existing information records.
■ Records up to 1,000 characters long with each item up to 250 characters.

■ Advanced spreadsheet features include individually variable column widths, protected cells, a programming facility plus a wide range of maths functions.

■ Supports virtually any printer –CBM, EPSON, JUKI, BROTHER, OLIVETTI and many others.
■ Parallel printers require ONLY a low-cost cable.

■ Worksheet manipulation lets you Search, Sort, Copy, Move, Delete and Insert by row, column or a range.
■ Text editing facilities for letters, invoices, report headings etc.

■ Include information directly into the Worksheet from VizaWrite and almost any other system.
■ Simultaneous display of worksheet and line or bar graphs.

VizaStar integrates three important electronic aids to your business or home office.

A fast and easy-to-use package – VizaStar is a comprehensive information processor that includes an electronic worksheet, information filing system and simultaneous on-screen graphics.

VizaStar has been designed to incorporate the very latest in user-friendliness – so now you can handle your all-important information in many new ways and in a quick and effective manner.

The information filing capabilities of VizaStar enable you to store your information onto disk in an ordered and instantly retrievable form. This means that you can quickly pick out individual or entire groups of related information to create lists, statements, labels or reports.

VizaStar is the ONLY program of its kind on the Commodore 64. Completely consistent with the VizaWrite word processor, VizaStar provides a totally comprehensive office system.

VizaStar costs just £99.95 (incl. VAT) from your computer dealer and selected stores. Please write for more details and the name and address of your nearest dealer.

VIZA SOFTWARE, 9 MANSION ROW,
BROMPTON, GILLINGHAM, KENT ME7 5SE
TEL: MEDWAY (0634) 813780
Dealer enquiries welcome.

SOFTWARE

AVAILABLE NOW- VIZASTAR 64
£99.95
(inc VAT)

the trouble as the results can be spectacular – witness the amazine games available for the '64.

Programming in machine code gives the programmer access to speeds of execution for his programs which could not be contemplated in Basic. The complete machine code tutor consists of 23 lessons with associated examples of programming and exercises. An assembler emulator is included which allows the user to run his programs without fear of the machine hanging as it is wont to do in real machine code.

The user is taken step by step through the registers, memory and then some actual instructions. The booklet and the on-screen tutor complement each other well, the user need only move on when he is sure that he understands all taught so far. Any section can be recapped from the menu of lessons which appears on the screen when any lesson or exercise is completed or when an exercise is interrupted.

The first lesson is entitled 'Registers' and consists of only a page of text – most lessons are much longer than this. Lesson two teaches about memory: what do those sacred words RAM and ROM mean. After the third lesson, which is about loading and storing registers, comes the first exercise. Exercise one shows use of LDA and STA in a very short assembly language (assembly language is machine language in a more readable form) program running under the simulator. The status of the flags and the contents of each of the registers is shown for each instruction as it is executed. The flags are then discussed and simple arithmetic follows.

The Complete Machine Code Tutor manages to get over concepts such as registers and flags without resorting to being condescending or treating the reader like a moron. Explanations are concise and well worded and do not repeat themselves unnecessarily.

Topics covered include the use of different addressing modes to access different types of data, comparing data and conditional branching. Binary coded decimal and its uses are explained, and other mathematical instructions and techniques are also covered fully.

The Complete Machine Code Tutor takes the reader up to such concepts as stack manipulation and interrupts. Beyond this point the reader should have the confidence to 'go it alone'.

A package of this type can instruct the reader on actual 6502 Instructions and how to use them. To program effectively the reader must still then practice and practice to appreciate the techniques behind machine code programming.

Contact: Anirog, 29 West Hill, Dartford, Kent. Tel: 0322 92513.

PILOT-PLUS/64

"would suit the programming beginner"

Pilot is a language used for computer assisted learning (CAL). It is a very simple language, sometimes sited as the ideal beginners language. Pilot-Plus/64 conforms to the language base specifications as set down by Western Washington University, but has been expanded to make use of the 64's graphics and sound capabilities and also can be interfaced to Basic.

Pilot-Plus/64 commands are all one or two letters, this makes Pilot-Plus/64 programs less readable than Basic, but due to the lesser number of commands to learn, one becomes accustomed to reading and understanding Pilot listings very quickly.

Pilot-Plus/64 comes with a powerful screen editor with bi-directional scrolling, search and replace and renumber commands included. Pilot-Plus/64 line numbers are insignificant within the language as labels are used – they appear only for convenience while editing. The editor section of the manual is well explained and easy to read, but when one starts reading about the language itself one is immediately confronted by 'A line of Pilot-Plus/64 can be up to 80 characters long and consists of a line number from 1 to 63999...', O.K. so far; '..followed by an optional label or a * followed by up to six characters, followed by an op-code, followed optionally by one or more modifiers and/or conditionals, followed by a colon, followed optionally by a line of text'; phew!

Pilot-Plus/64 provides for quite advanced screen handling with commands to position the cursor, set graphics or no-graphics character set and scroll the screen.

Sound has not been forgotten with a sound effect command with time, frequency and an attribute defining voice and waveform parameters. Printers are handled by hard copy versions of pilots printing commands – only Commodore printers through the serial port are supported, so interfacing other printers could be tricky.

Pilot is based around a question and answer system with structures for several attempts at a problem, with different messages on different attempts. Input is accepted from the keyboard and then matched to an answer or set of answers, conditionals ('if..then' type statements) then direct program flow depending on correct or incorrect input.

Typical Pilot usage would be for teaching lists of information, or shape recognition. Pilot-Plus/64's Basic interface is used for those jobs Pilot cannot handle such as files and also as an intermediary to machine code routines.

Pilot-Plus/64 seems well implemented and would suit the programming beginner but for the verbose and unnecessarily complicated manual. For most other purposes Pilot is too simple a language to produce more powerful programs.

Contact: New Generation Software, The Brooklands, 15 Sunnybank, Lyncombe Vale, Bath. Tel: 0225 316924.

PULSE ASSEMBLER

"difficult to recommend"

Pulse is Interceptor's second assembler for the 64, and is an extension of their first assembler. Written in compiled basic, which does slow down assembly speed quite considerably, Pulse is not directly source code compatible with other assemblers on the market for the 64. Listings retyped from other assemblers or from magazines will require some work to convert them to Pulse format.

The major differences are semi-colons being used instead of commas for indexed addressing and delimiters in BYT instructions. A far more crucial difference is the limiting of labels to two characters! Anyone who can write meaningful two letter labels will not find this too much of a disadvantage but for the rest of us this does not help in producing readable source code. Pulse allows branches to labels or to linenumbers. A limited form of expression evaluation is available but allows only addition.

With Pulse only 11k is available for source code, and there are no linking instructions to allow longer programs. This limits severely the size of program that can be assembled.

For disk users commands have been added to display the disk directory on screen without losing the source program, and for initialising and validating disks, it is also possible to read the disk error channel.

Most 6502 conventions are followed apart from those described above, < and > for low and high byte and # for immediate addressing are implemented. As Pulse can work only in decimal, the $ and % signs for hexadecimal and binary are discarded. Comments are preceded by three asterisks.

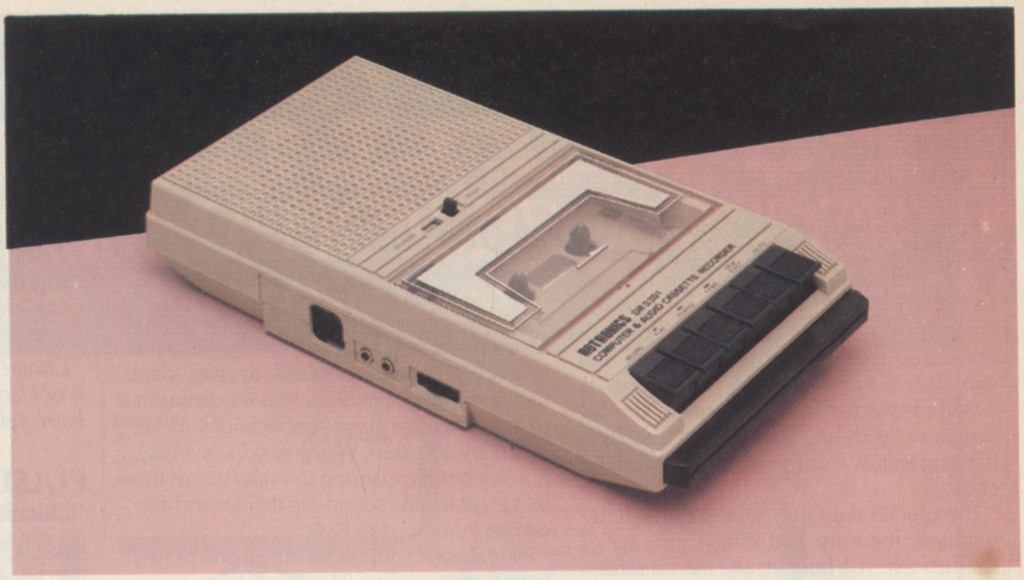
Auto line-numbering, renumbering and block delete commands are available, as is listing to a printer. Typing 'commands' gives a summary of Pulse commands.

Pulse is one of the cheapest assemblers on the market, but it is still difficult to recommend it to anyone who intends to use an assembler for more than an occasional short machine code routine.

Contact: Interceptor, Lindon House, The Green, Tadley, Basingstoke, Hants. Tel: 07356 71145.

ONLY
£34·95
(p&p £2·00)

THE ROTRONICS DR2301 COMPUTER/ AUDIO CASSETTE RECORDER



The Rotronics DR2301 has all the facilities you would expect of a quality audio recorder and also works perfectly with the VIC 20 and CBM 64 computers without any fiddly separate boxes or adaptors. Simply connect the DR2301 directly with your Commodore computer via the lead supplied and you are ready to start. The built-in interface circuitry ensures that SAVEing and LOADing is completely reliable – even when using commercially produced software. The DR2301 also allows the computer to sense when the PLAY key has been depressed.

Additional features are auto-stop, tape counter, in-built microphone and foldaway carrying handle. The DR2301 is also compatible with the ZX81, Spectrum and many other popular home computers.

The DR2301 will take its power from the computer (Commodore only), mains adaptor (supplied) or internal batteries. Each unit carries a full 12 month guarantee.

Superb accessories for Commodore from Rotronics

THE ROTRONICS PORTABLE CASE

Here is the ideal portable work station for home, school or work. Specially made for most home microcomputers, it contains your VIC 20 or CBM 64 within a smart executive style case with removable lid for convenience in use.

The individually tailored foam insert securely protects your micro and cassette recorder (C2N or DR2301) during transit. Additional storage space in the lid holds manuals and up to twenty cassettes. A scalpel is provided to modify the insert for expansion units and an alternative insert can be supplied if you change your hardware in the future. The case is also available with uncut foam inserts.

All components remain fully operational within the case via inter-connections routed between the double layers of foam, so there are no unsightly leads.

The case has been designed for easy use with each component positioned for convenient operation. The overall dimensions are 138mm x 725mm x 363mm.

ONLY £34·49 (p+p £2·50)

ORDER FORM

Please send (enter as appropriate)

___ Rotronics Computer/Audio Cassette Recorder(s) at £36.95 each (inc. p+p). ________

___ Rotronics Portable Case at £36.99 each (inc. p+p) for VIC 20/CBM 64* with C2N/DR2301* or Uncut Foam ________

Trade Enquiries Welcome
All prices inclusive of VAT

TOTAL £ ________

☐ I enclose a cheque/PO* for £ ________ made payable to SMT

☐ Debit my Access/Barclaycard* account no.

(*delete as applicable)

Signature ________

Name ________

Address ________

Send to (no stamp required):
SMT, FREEPOST, Greens Norton,
Towcester, Northants, NN12 8BR

Please allow 28 days for delivery.

VISA

Access

SMT

VIC 20 and CBM 64 are registered trademarks of Commodore Business Machines.

CHROMASONIC PERSONAL COMPUTERS

48 Junction Road, Archway, London N19 5RD.
Tel: 01-263 9493 and 9495.
238 Muswell Hill Broadway, Muswell Hill, London N10
Tel: 01-883 3705

COMMODORE 64

PROFESSIONAL COMPUTER SYSTEM

COMMODORE 64
1541 DISK DRIVE
MPS-801 PRINTER
EASY-SCRIPT (Word processor)
EASY-FILE (Database)
INTRODUCTION TO BASIC (Part 1)
BOX OF PAPER AND BOX OF DISKS

ONLY £599.00
P&P £14.00

SX64

PORTABLE COMPUTER

Includes the following FREE software: Easy-script, Easy-file, Easy-finance and six games. Includes the following FREE software: Easy-script, Easy-file, Easy-finance and six games.

£795.00 + £20.00 p&p

commodore 64 packs

64 BEGINNERS PACK	64 STARTER PACK	64 HOME/BUSINESS PACK
Commodore 64 C2N cassette deck	Commodore 64 C2N cassette deck Intro to Basic (partl) Quickshot joystick A game of our choice	Commodore 64 1541 disk drive Box of disks
ONLY £229.00 P&P £8.00	**ONLY £255.00** P&P £9.00	**ONLY £395.00** P&P £12.00

MONITORS

Commodore 1701 Colour and Sound	£195.95
Microvitec 1431 Colour (Ideal for BBC)	£228.85
Microvitec 1431 AP RGB/Composite and Sound	£258.75
Phillips 12" Green	£79.00
Monitor Plinth (c)	£11.50

Postage on Monitors £14.00

commodore 64

e Commodore 64	£195.95
c C2N Cassette deck	£39.10
c Supersaver 64 cassette deck	£29.95
e 1541 Disk Drive	£195.95
f 1701 Colour Monitor	£195.95
e MPS-801 Dot matrix printer	£195.95
f MPS-802 Quality matrix printer	£295.95
d 1520 Printer – Plotter	£149.95
c RS232C (Check for availability)	£34.95
c Z80 Card	£50.00
a Commodore Joystick	£6.90
c Quickshot II Joystick	£10.50
c Paddles (1 pair)	£13.50
a Microguide	£5.95
d Plinth for 64 system	£24.95
c superbox 64 (inc. IEEE)	£94.95
d Vic Switch	£97.75
c DAM'S IEEE Interface	£69.95
b Surge Protector Plug	£12.95
c CBM64 – centronics (interface)	£68.94
c CBM64 – Epsom (interface)	£61.99

PRINTERS

	£229.00
NEW Daisywheel Printer	£259.95
RX80 (Tractor only) Dot matrix	£299.95
RX80FT (Friction&Tractor) Dot matrix	£399.95
FX80 (Friction & pin feed) Dot matrix	£545.95
FX100 (Friction & pin feed) Dot matrix	£329.95
Daisy Step 2000	£395.95
Juki Daisy Wheel	£11.95
BBC to Centronics cable (b)	£19.95
64/VIC to Centronics cable (b)	£7.95
Software for above (b)	

P&P on above unless stated (f)

MEDIA SUPPLIES

Diskettes by Verbatim (supplied in boxes of 10)

b S.S./D.D. 40Tr.	£17.95	b D.S./D.D. 80Tr.	£32.75
b S.S./D.D. 80Tr.	£24.75	**b Plastic library case**	£1.35

b C12 Cassettes 50p each or 10 for £4.50

Computer paper (supplied in boxes of 2000 sheets)

d 11 × 8	£13.80	d 11 × 9½	£12.65	d11 × 15⅝	£15.52

Sorry p&p paper **£3.00** a box

Printer Ribbons

b Judd	£1.85	b MPS-801	£6.99
b Epson	£5.00	b 1515/1525	£6.21
		b Daisystep 2000	£5.52

Dust covers: All codes a

BBC	£2.95	64/VIC 20	£2.95	C2N	£1.95
Single disk	£2.95	1541	£2.95	RX/FX80	£3.95
Dual disk	£3.95	1525/GP100	£2.95	FX100	£4.95
		1526	£3.95	Dragon	£2.95

COMMODORE 64 SOFTWARE

BUSINESS

b Easy Script D	£69.00
b Easy Spell D	£50.00
b Easy Stock D	£75.00
b Easy File D	£50.00
c Superbase 64 D	£88.00
b Sales Ledger D	£75.00
b Purchase Ledger D	£75.00
b Visa Write D	£68.00
b Calc Result Ca	£49.95
c Calc Result (Advanced) D	£99.00
c Wordcraft 40 Ca	£89.95
b PractiCalc C – D	£39.95 – 44.50
b PractiFile C – D	£39.95 – 44.50

PROGRAMMING

b Intra to Basic Part 1 or Part 2 C – D	£14.50
c Simons Basic Ca	£45.00
b Assembler Tutor C – D	£29.95
b Assembler Development Package D	£24.95
c Petspeed D	£50.00
b Programmers Utilities D	£14.99
b LOGO D	£34.95
b MON 64 Ca	£39.95
b ACOS + C	£8.95
b Forth 64 Ca	£34.95

ADVENTURE STRATEGY

b Zork I, II, or III D	£11.99
b Flight Simulator II D	£35.95
b Hulk C – D	£9.95 – 13.95
a Beach Head C	£9.95
a Valhalla C	£14.95
b Solo Flight C – D	£14.95
a Tales of the Arabian Nights C – D	£7.00 – 9.00
b Colossus Chess C – D	£9.95 – 12.95
a Aztec Challenge C	£8.95
a Caverns of Kafta C	£8.95

GAMES

a Loco C	£7.95
a Flight Path 737 C	£7.95
b Bozo's Night Out C – D	£6.90 – 9.99
a Pinball Wizzard C	£6.95
a International Soccer Ca	£9.99
a Revelation C	£7.95
a Forbidden Forest C	£8.95
a Trashman C	£7.95
a Bongo C	£6.95
b Space Pilot C – D	£7.95 – 9.99
b Zodiac C – D	£7.95 – 9.99
a Bumping Buggies C	£6.99
a Encounter C	£9.95
a Gilligans Gold C	£6.90
a Manic Miner C	£7.95
a Hunchback C	£6.90
a Blagger C	£7.95
a Sheep in Space C	£7.50
a Aquanaut C	£7.00
b Superpipeline C – D	£6.90 – 9.99
a Son of Blagger C	£7.95

EDUCATIONAL (by Sulis)

b Beseiged C	£9.99
b Wordpower C	£9.99
b Time Traveller C	£9.99
b Open sesame C	£9.99
b Just a Mot C	£9.99

BOOKS

c Programmers Reference Guide	£ 9.95
c 64-Getting the most from it	£7.95
c The Complete 64 Rom Disassembly	£5.95
c Using the 64	£9.95
c Commodore 64 Adventures	£5.95
c Elementary Commodore 64	£13.95

C=Cassette Ca=Cartridge D=Disk

TERMS

Phone or send for our latest details of our range of products which is far too large to put into this advert. Besides the complete range of Commodore and BBC we also stock all the latest software and books for the 64, VIC, BBC and Dragon. We guarantee all our products for 1 year (on 64, 2 years). Payment may be made by Access, Barclaycard, Bankers Draft, Building Society cheque or cash. Sorry, cheques need 4 day's clearance. Postage and packing: see codes. ALL PRICES ARE INCLUSIVE OF VAT.

WE RESERVE THE RIGHT TO ALTER PRICES WITHOUT PRIOR NOTICE

Postage codes a = £0.65, b = £1.00, c = £2.00, d = £3.00, e = £8.00 (Securicor), f = £14.00 (Securicor)

CLASSIFIED

64 OWNERS PRINTER PROBLEMS?

WE HAVE THE ANSWER!
TRY OUR NEW PRINTER INTERFACE:
★ List basic programs ★ Print under program control ★ Send printer output from many software packages, e.g. Easyscript.

Compatible with standard centronics parallel printers (Epson, Brother etc.). Interface unit comes complete with transparent software on cassette or disk. Full 12 month warranty. Fast delivery.

Cheques/P.O.'s for just £27.95 to:

AB MICROSYSTEMS
P.O. BOX 12
SWINTON
MANCHESTER.

Please state cassette or disk required.

TWO NEW MIND-BENDERS

(on cassette for Commodore 64)

THE REAL GAME OF
BATTLESHIPS **£8.95**
HAPHAZARD HANOI **£7.95**

(Note: probably too difficult for most kids)

SENIOR GAMES
12 ST BARTHOLOMEWS CLOSE
KETTERING NN15 5EF

CBM 64

MACHINE CODE MONITOR

20 commands including assembler, disassembler, load save, verify (from tape or disk), relocate, single step execution and many more — an invaluable tool for the serious user.

CARTRIDGE ONLY — £29.95

BASIC TOOLKIT

A range of useful basic commands e.g. Auto, renumber (including goto's, gosub's etc.), delete, help etc.

CARTRIDGE — £24.95
CASSETTE — £16.95

PRINTER INTERFACE

Allows connection of Centronics type parallel printers to your CBM-64 (includes CBM control code conversion) — Included in both Monitor & Toolkit.

CASSETTE — £ 7.95
MONITOR & TOOLKIT
CARTRIDGE ONLY — £44.95

Please add 75p for postage & packing to all orders.

Further details & orders to:

APOLLO COMPUTER SYSTEMS
P.O. Box 32, Dunsfold,
Godalming, Surrey, GU8 4NE

COMMODORE 64 SOFTWARE

DATAFILE: A database with very powerful options. Includes: – print all/selective records, delete, amend, save, load, copy, alphanumeric sort, user defined fields, memory check, total numeric fields, multi field interrelational, wildcard and search between limits. Multiple file option, and many more. Fully menu driven with complete instructions. Disk and cassette fully compiled. Outstanding value.

CBM 64 (compiled) cassette **£7.45**
CBM 64 (compiled) disk **£10.25**

TEXTFILE: Powerful word processor. Facilities include:- Large text buffer, auto centre text, variable tab, insert, amend, delete, copy, move text, word count, right justify, pageing, join files, multiple file handling, print all/part text, etc. Fully menu driven with comprehensive easy to use instructions. Great value.

CBM (compiled) cassette **£8.25**
CBM 64 (compiled) disk **£10.75**

All programs complete with full documentation and guarantee and can be used with all direct connect CBM 64 printers including 1520 printer plotter and most centronics (with suitable hardware interface). Prices include VAT. Packing and fast delivery by 1st class mail.

Cheque/PO to:-

A&C SOFTWARE
51, Ashtree Rd., Tividale,
West Midlands B69 2HD.

COMMODORE 64 SOFTWARE GAME AND BUSINESS USE.

Also new releases list every 2 weeks.

Send your name and address to go onto our mailing list to:

M.J. SEAWARD
ST. OLAFS ROAD
HILL HEAD, STRATTON
NR. BUDE, CORNWALL.
TEL: BUDE 4179 up to 10 p.m.

VIC 20 SOFTWARE HIRE

Free membership. 500 delighted members.
SAE for your free membership kit
To V.S.H. (CCI) 242 Ransom Road, Mapperley,
Nottingham.

animated **CBM 64** musical

Flashcard & Spelling

ages 1.5 – 7 years

Developed in conjunction with school and educational psychologist. Cassette £4.50 Disk £7
• Full refund if not delighted •
TODDLERSOFT
1 Cat Lane Cottage, Ewelme, Oxon OX9 6HX

LEARN THE SECRETS OF COMPUTER PUNCH CODES

This illustrated and easily read manual will teach anyone interested in computing as a career ALL they need to know to be able to read and understand computer punch codes as used by professionals on almost all mainframe and mini's using punched card readers.

SEND NOW for LEARN THE SECRETS OF COMPUTER PUNCHED CODES complete with FREE program listing for the CBM64.

SEND cheque or P.O. for £7.50 + 50p p.p. payable to LIMAT BOOKS 2 GROSVENOR PLACE NORTH SHIELDS NE29 0NH TYNE and WEAR.

FOR THE PRICE OF A GAME YOU CAN HAVE A LIFETIMES' KNOWLEDGE

NAME
ADDRESS
TOWN
POSTCODE
COUNTRY

1541 DISK MANAGEMENT

For the ***Commodore 64***. A menu driven 20 function disk management utility. Features include Edit Track/ Sector, Disk Back-Up, Protect and Unprotect programs plus **enhanced** and normal disk commands. Possibly the only disk utility you will ever need. For the absolute beginner and expert user. Supplied with comprehensive booklet on a quality disk for only £8.75 inc. Cheque/P.O., or SAE for details, to:

CLARK KENT SOFTWARE (Dept. CBM)
26 NORTH CAPE WALK, CORBY
NORTHANTS NN18 9DQ

for the
Commodore 64
send work for evaluation to
DARKSTAR,
2 Regent Court
Amhurst Park
London N16 5LP
Telephone: 01-802-8807

CLASSIFIED

SOPHISTICATED GAMES FOR VIC 20 & CBM 64

VIC/64 CRICKET Realistic game of tactical skill and luck. Ball by ball commentary with full scorecard and all the major rules of cricket correctly interpreted. Printer/game save facilities.
VIC CRICKET for VIC 20 + 16K 5.99
NEW: 64 CRICKET with extra features..........................6.99

LEAGUE SOCCER League title game for 2-24 players with automatic fixtures, action commentary, results check, scorers, league table, cup draw etc. Printer/game save facilities.
LEAGUE SOCCER for VIC 20 + 16K..............................5.99
NEW: 64 LEAGUE SOCCER with many more features still...6.99

WHODUNNIT 12 guests have gathered for drinks at Murder Manor, but one of them has more than drinks on his mind. Addictive and thrilling detective game for 1 to 6 players, with genuinely different game each time.
WHODUNNIT for VIC 20 + 8K or any CBM 64 (state which) 4.99

TOP OF THE POPS Easy to learn game about the music business. For up to 10 players. Includes printer/game save features.
TOP OF THE POPS for VIC 20 + 8K.............................4.99
NEW: 64 TOP OF THE POPS – even bigger and better 5.99

ELECTION NIGHT SPECIAL Lead your own party into the next General Election. A game for 1-3 players. Printer/game save.
ELECTION NIGHT SPECIAL for VIC 20+ 8K................4.99
64 ELECTION NIGHT SPECIAL – bigger and better COMING SOON

PARTY 4 Four games to match to progress of your party: MASTERWORD, A DAY AT THE RACES, GAME X (Strip Poker) and CONSEQUENCES. Harmless fun (nothing offensive) but good fun.
VIC PARTY 4 for VIC 20+3K or more...........................5.99
64 PARTY 4..COMING SOON

★ NEW ★: ADULTS ONLY Fun game for 2-10 broadminded players. Lots of cuddling and kissing, plus many other rewards and forfeits: you never know what you'll end up doing, or with whom! Nothing offensive, but you MUST be fairly broadminded.
ADULTS ONLY for VIC 20+16K expansion 5.99
64 ADULTS ONLY ....COMING SOON

DISC VERSIONS AVAILABLE FOR ALL GAMES – £2.00 EXTRA

ALL PRICES INCLUDE P&P (UK ONLY). GAMES SOLD SUBJECT TO CONDITIONS OF SALE WHICH ARE AVAILABLE ON REQUEST

PLEASE WRITE OR PHONE FOR DETAILS OF OUR FULL RANGE SOPHISTICATED GAMES Dept CCI
27 Queens Rd, KEYNSHAM Avon BS18 2NQ.
Tel 02756-3427

THE NEXT TRAIN CALLS AT...

Fulfill a childhood ambition and climb aboard a powerful locomotive as the driver. Your train has a schedule to keep to, also as the Driver you will have to obey all signals and line speeds. Your performance will be monitored throughout and an end of game score will be displayed provided that you have not been relieved of the controls for endangering passengers lives. Three games to choose from all with a variety of locomotives:

Flying Scotsman — Kings Cross to Doncaster with emphasis on high speed running.

Cornish Riviera — Paddington to Exeter with a stop at Reading.

Master Cutler — The latest in our famous trains series travelling from St. Pancras to Leicester with a fast non stop or semi fast with several stops.

For Commodore 64, BBC 'B' and Spectrum 48K — £7.50 for each game available from:

DEE-KAY SYSTEMS (Dept. CCI)
18 Salford Close, Woodrow South
Redditch, Worcs. B98 7UN

COURSEWINNER
selec

COURSEWINNER

The Punters Computer Program

COURSEWINNER allows you to use the power of your computer to get the edge on the bookmaker.

- COURSEWINNER contains a database full of detailed information on all English and Scottish flat courses. The ten leading jockeys and trainers, and effect of the draw is detailed for each course. This information can be displayed on the screen at any time.
- The program analyses these factors combined with the results of the last three outings, starting price and weight carried.
- COURSEWINNER is simple and quick to use, yet very powerful.
- Boxed with detailed instruction booklet.

Price £12.50 all inclusive IMMEDIATE DISPATCH (RETURN OF POST)

Available for:
SPECTRUM (48K), BBC (B), COMMODORE 64, DRAGON, APPLE II/IIe, ATARI (48K).

POOLSWINNER

The Ultimate Pools Prediction Program

POOLSWINNER
selec

- POOLSWINNER is the most sophisticated pools prediction aid ever produced. It comes complete with its own massive database.
- Can be used for Scoredraws, Draws, Aways and Homes.
- The database contains over 20 000 matches (10 years league football). It updates automatically as results come in.
- The precise prediction formula can be set by the user. This allows development of your own unique method.
- Package is complete with program, database and detailed instruction booklet.

Price £15.00 all inclusive IMMEDIATE DISPATCH (RETURN OF POST)

Available for: SPECTRUM (48K), ZX81 (16K), BBC (B), COMMODORE 64, DRAGON, APPLE II/IIe, ATARI (48K).

Available from dealers or direct (return of post) from:

VISA PHONE

selec
SOFTWARE

PHONE

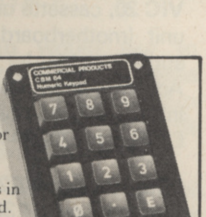
37 Councillor Lane, Cheadle, Cheshire. Phone: 061-428 7425

"WARNING

Advertisements placed in this magazine are to be in strict compliance with our standard Conditions (copies of which Conditions are available on request) and on the clear understanding that the advertiser warrants that his advert(s) does not infringe any copyright or conditions of sale of any interested party in the advertised product(s). Further the advertiser indemnifies the proprietors of this magazine in respect of costs damages or any other claims brought against them as a result of legal action arising from the publication of the advertisement. Any breach of these terms or the said Conditions may result in prosecution of the advertiser by the proprietors."

At last!

NUMERIC KEYPAD FOR CBM64 & VIC 20



Essential for the serious or business user. NO SOFTWARE REQUIRED: simply fits in parallel with the keyboard. Always ready to use. High quality, gold contact key switches for long reliable life. Includes return key and 1 metre of cable.

Now available at the introductory price of £28.75 (inc. VAT) & £1.00 p & p.

Please sent cheques/PO to:—

COMMERCIAL PRODUCTS,
11a Hylands Close, Furnace Green,
Crawley, Sussex RH10 6RX.

COMMODORE REPAIRS
BY COMMODORE APPROVED ENGINEERS

VIC 20 modulators £6.50, VIC 20 from £14.50, CBM 64 from £18.00, C2N from £7.00, Printers, Disk unit etc., for more details, write or telephone

G. C. BUNCE AND SON
36 BURLINGTON ROAD,
BURNHAM, BUCKS SL1 7BQ
Telephone: (06286) 61696

CONTRACT BRIDGE

Complete Contract Bridge single-handed against your Commodore 64. Random hands. Unsurpassed bidding and play. Full scoring. Now at last you can play a full game exactly as you would with friends..... or even better! Amazingly versatile too. Compare these options:

- Define your own hands
- Display everyone's cards
- Make computer bid or play for you
- Lay down a hand
- Re-bid or replay any hand
- Change sides
- Bid all four hands yourself
- Play all the cards yourself

It must be good to offer so much. Why settle for less? Send or phone today. £9.95 (cheque or Access) fully inclusive. Only available direct from us, by return.

CONTRACT BRIDGE
– the definitive name on the definitive game.

Also available for Sinclair Spectrum 48K

HIGHLIGHT SOFTWARE
3 Nether Court, Halstead, Essex CO9 2HE.
Tel. (0787) 475714

Access

COMMODORE REPAIRS

VIC 20's	£12.50 + parts
C64's	£15.00 + parts
1540/41	£20.00 + parts

(Plus all Commodore Systems write or telephone for further details)

Send your faulty machine with a brief note describing faults to:

TRIDENT ENTERPRISES LTD
37 LINDEN HOUSE
COMMON ROAD, LANGLEY
SLOUGH, BERKS SL3 8TT
TEL: (0753) 48785

We also Repair BBC's and Spectrum Computers. (The above prices are exclusive of vat & p&p.)

CLASSIFIED

Simons Basic - swap for C64 CP/M package or sell £30. Tel: 01-904 8141.

MPS801 printer - as new - £110. Tel: 01-226 8688.

Commodore 64, C2N, disk drive, Seikosha GP100VC printer, Superbase 64, Magpie, The Last One (program generator) Simons Basic, Dr Watsons Beginners Basic and assembly language, Easy Script, Arcade games, plenty of books, tips and listings from American publications. £750ono. Tel: N. Lipton 0268-416312.

C64 owner wants to trade software. D Cannons, Ameliasburgh, Ontario, Canada, KOK-1AO.

"DIDI-DIDA" New morse tutor for CBM64 as the best yet and its many features will improve your receiving and sending ability. Cassette £7 inc Disc £9. Moray Micro Computing, Enzie Slackhead, Buckie, Moray AB5 2BR.

VIC 20, C2N cassette deck, 3k RAM pack, super expander cartridge, motherboard, over 70 games and utilities including 40 column version tape and a machine code compiler. All worth £900. Reasonable offers. Tel: Woking 67693.

Software half price. Practicalc 64 - disc £20. Data Manager cassette £10, disc £10. Ultisynth 64 - cassette £8. Tel: Walton-on-Thames (0932) 241242.

Commodore 64 looks for programs (send list!) and ready for all suggestions (CBM and tape and 1541). M Van G., 7 Avenue Guy Moquet, 93420 Villepinte, France.

1541 Disk drive and Superbase 64 and 2 box disk, unused. Cost £365, £250ono. Tel: St Albans 39393.

Commodore 64 looks for other CBM64 users to exchange programs and tips. I have many programs on disk. Yehuda Ernst, Yemin Orde, D.N. chof Hakimel 30895, Israel. Telephone 04-942652 not on Saturday.

VIC 20 Audiogenic Forth cartridge and manual never used. Explanatory book "Starting Forth" by Leo Brodie — £35 for both. Tel: 0229-23247 (please phone after 6.00 pm)

VIC 20 Software: Honeyfold assembler course (Book & TAP) £7. Super Lander, The Count, Cosmic Cruncher (cartridges) £4 each. Kong/Wacky Waiters/Arcadia/Panic/Vicmen/Exterminator/Sky Hawk/Subspace Striker (tapes) from £2 each. Complete set of Comp. & Video Games to April '84. Wants: Pirate Cove/Set of paddles. All originals - Tel: 579 1507 or 574 0450 - Ralph.

VIC 20 & 16k switchable RAM. Also: Cassette deck, Into. to Basic Parts 1 & 2, User Manual, Programmers Ref. Guide, Vic ROM Disassembly and 4 cassettes to be used with Intro. to Basic Parts 1 & 2 - £150. Tel: 01-808 9188.

CBM64 software for sale: Simons Basic £30, The Hobbit £7.50, Audiogenic Home Office £7.50, Llamasoft-Gridrunner, Matrix, Lazer Zone £3 each, Grandmaster Chess £10. The lot £55. Tel: 04012 4576.

Lucas LX80 quality dot matrix printer. Including RS232C and parallel interfaces for CBM64(VIC 20. Friction and tractor feed. Good working order - bargain at £175. Tel: 04012 4576.

Lots of top original software for the CBM64. Best offer secures each title (or cheap sale in bulk). Tel: (0783) 201722 for details or write N. Stokell, 4 Healey Drive, Tunstall, Sunderland, Tyne & Wear SR3 1AY.

Extended Basic for the Commodore 64. Over 500 new keywords, including: hires graphics, sprites, sound, disk handling, printer output. Other features: multiple disk handling, Centronics interface, hex numbers. Cassette £14, disk £15.50 (inc. P&P and 30-page manual); or send SAE for further details. SPREADBURY SYSTEMS, 6 Woodford Road, Bournemouth BH1 3PQ. Tel: (0202) 297611.

Commodore 64 business system. Comprising: 1541 disc drive, graphic printer 1525, manuals, magazines - £500 negotiable, can be sold separately. Also 8050 dual disc drive, never been used, still in box - £500 negotiable Tel: 01-821-3145 (day) Gwyneth.

Commodore 64 owner wishes to hear from people with good software to swap on disk or cassette. I have over a hundred titles to swap - some American. For details please write to S Scott, 28 Meadowfield, Whaley Bridge, Stockport, Cheshire.

VIC 20, cassette unit and Alfon expansion unit (motherboard) Cartridges (16K ram; super expander; Sargon II Chess; Adventureland; Alien). Many games tapes. Intro. to Basic books (incl. Vic Revealed) £150. Tel: 0702 74417.

Commodore 3022 printer £150ono. Also Commodore PET 3032 computer with many extras including word processor £150. Tel: Brackness (0344) 422114.

Dual disk drive Commodore 4040 with Dams interface to Commodore 64 - £500, swap for 1541 plus £350. Practicak disk 64 £25. Tel: Hornchurch (04024) 55733 evenings/weekends.

Home Accounts. Put your house in order! Probably the best home use for your computer! Comprehensive coverage of bank accounts, credit cards, HP, etc. Inbuilt accuracy check for all transactions. Projects cashflow for any period ahead. Available for CBM64 or VIC 20. £7.50 or FREE details from DISCUS SOFTWARE, FREEPOST, Windmill Hill, Brixham, TQ5 9BR. Tel: 080 45 55532.

Look here every CBM64 owner! Do you want to exchange tips and software? Contact: Even/Simen Scharning, Gon, 3145 Tjome, Norway or Sverre Stormbo, Drillene 62, 3145 Tjome, Norway.

CBM64 user wants to swap disks and cassettes: send list to - H. Krogseter, Delenenggt 31, 0567 Oslo 5, Norway.

Transparent, flexible industrial keyboard dust covers to fit PETS, VIC 20, 64's. Price £8.99 + 40p postage. (14 day money back guarantee) DBM Products, Box 6, Melton Mowbray, LE13 1YL.

Study bookkeeping and accounts at home using our 'O' level cassette course. Also short courses on computer programming, wages, PAYE, VAT. Trevor Burton, Bunbury, Cheshire, CW6 9SX. Tel: 0829 260868.

PET 4030 - with 8030 disk drives and 2030 printer in very good condition. Cassette included together with Commodore Magazines. Surplus to requirements. Reasonable offers will be considered. Phone J.S. Botha 01-622 0222.

Commodore 64 books for sale at half prices. Please write to T.V. Tran, 130 Elgar Avenue, Great Malvern, Worcs.

CBM 4032 (12") Software and add-ons for sale. All original items, with suppliers documentation; one only of each. HR40B hi-res board £65, 16 ROM expansion board £30, Command-O £25, Superchip £15 (both toolkits fit UD12), 2-ROM assembler pack £35, eprom programmer £30, Busicalc (spreadsheet) £20, Papermate + (wordpro) £20, Simply-file (database) £20, Disc Recover £10, Screen Input utility £10, Supersort £20, Statsa Pack £12, Supergraphics £15, Cornucopia (adventure) £15, Prate adv. £5. Software on 4040 format disks. Some new and used disks. Tel: 0843 31602 after 6pm.

CPM cartridge £40; Arabian Nights - disk £6; Siren City tape and Horace £3; Jupiter Ace £20; Programming the Z80 £8; CBM64 Exposed £5; Mastering the 64 £4; CBM64 M/C Master £5. G. Foreman, 82 Hazelton Road, Colchester, Essex CO4 3DY.

Easyscript W.P. package for CBM64 disk, unopened. Offers to (Forest Row) 3200, evenings.

CLASSIFIED

COMMODORE 64 — VIC 20
BYTE BACK
Commodore 64/Vic 20

If you have never had a Program CRASH don't bother to read on.

From beginning BASIC to mastering MACHINE CODE that DREADFUL moment comes when the computer LOCKS UP and all you can do is pull the switch and start again.

NOW YOU CAN HAVE ALMOST TOTAL PROTECTION
A hardware/software package containing:
(i) A RESET device which plugs into your micro, no mods needed.
(ii) A m/code program which completely RESTORES programs after reset.
(iii) A mach.code ASSEMBLER, enter mach.code easily in understandable form IDEAL for MODIFYING or writing programs.
(iv) A superb m/code DISASSEMBLER which lets you examine, and explains each m/code instruction. LIST Basic and Machine Code. PLUS with BYTE BACK it is virtually impossible to CRASH your own programs. CASSETTE – £6.95/DISK – £9.95

SUPERKIT 64
COMMODORE 64 ONLY

A SUPERB TOOLKIT of m/code routines:— Complete RE-NUMBER/ AUTO LINE/ TRACE/ FIND/ AUTO RUN/ BLOCK DELETE/ MEMORY SAVE and more. Software controlled flexibility, and at a sensible price. CASS – £6.95/DISK – £9.95. With SUPERKIT 64, BYTE BACK you have program PROTECTION and ALL the EXTRA UTILITIES for writing/modifying programs.

****REKORDAKIT 64****

HEAR your Datasette performing. Keep C2N in Tip Top condition. Simple to use plug-in device which reproduces audio out put and a TEST TAPE to ensure tape heads are correctly set. ONLY – £5.95. SPECIAL OFFER all three — £2.00p DISCOUNT. REMEMBER state Computer. Cheque/P.O. to:— ASH BYPRODUCTS, P.O. BOX 510, BIRMINGHAM B17 9ES.

VIC 20 + CN2 + 32K switchable rampack and motherboard 4 slot switch and Vicman and s/expander, Sargon 2, Prog. Ref. Guide, £200 worth of Vic books, mags, £100 worth of tapes, 1520 printer new. All manuals, and dustcover £260 the lot. M. Grosvenor, 4 Orkney Close, Blackburn, Lancs BB1 2JR.

Crazy Kong and Frogger by Interceptor Micro's £4 each. Also Magnificent Seven for the VIC 20, seven games on one tape for £3. Tel: Alexandria (0389) 53658.

VIC 20 (1 month old) and C2N cassette and £200 of software for sale - £165ono. May split and sell software for £2.50 each. Also 20 CBM 64 games, £40 or £2.50 each. P Simpson, 11 Egremont Street, Millom, Cumbria LA18 4EA.

Finnish Commodore 64 owner wishes to exchange games and other programs with English or somebody else user. Ville Lehtonen, Jokipolventie ID19, 37130 Nokia, Finland.

VIC 20, 16k switchable RAM pack, software, books, cartridges, Intro to Basic parts 1 & 2, C2N cassette deck, joystick £180ono. (0705) 818121.

Commodore 64, C2N cassette recorder, joystick, paddles, dust cover, 5 games including Hobbit. Also reference guide plus 2 other books. Computer only 3 months old - worth overall £300. £200ono. Ring Petham 602.

Commodore 64 looking for European Software, all types. Will exchange programs and tips from USA. Gary Greer, Rt.4, Box 1048 Sylacauga, AL35150, USA.

Commodore 64 games to swap: Forbidden Forest, Grid Trap, O'Riley's Mine, Savage Pond, Robin Rescue, Stix, Cosmic Convoy and lots more. Write to F. Choong, 11 Winleigh Road, Handsworth Wood, Birmingham B20 2HN for my entire list, or phone (021) 551 5420 and ask for Finn.

VIC 20 computer and cassette recorder, switchable 3/8/16k RAM pack, stack lightpen and game, Adman speech synthesisor, 6 cartridges, 14 cassette games including top selling Jetpac, Skyhawk and Galactic Abductor. Intro. to Basic Part I, Programmers Ref. Guide and Friendly Users Manual, many games, books and magazines etc. Ideal Xmas present. Cost £500 new, sell for £250. Contact (Kingsland) 540 after 5pm.

Wanted - good condition CBM 1540 disk drive with leads manuals etc. (VIC 20). Will pay up to £120. Ring 01-941 6079 evenings.

VIC 20, C2N recorder, 16k expander, 3k super expander, assembler, joystick, dustcover, 4 ROM games, 2 tape games and many own programmes, programmers reference guide, machine code tutor book (Dr Watson) £135. Tel: 020622 5133.

Wanted - 16k switchable RAM pack for VIC 20. I will pay up to £20 (depending on type). Send details of your RAM pack and price wanted. Mr T Nevey, 17 Llangoise Close, Stourport, Worcs DY13 8LJ.

Canadian 64 group would like to correspond with overseas 64 groups. Please write to: St Catherines C64 group, c/o Wesley Scharff, 196 Scott 222, St Catherines, Ontario, Canada L2N-ST2.

Commodore PET 32K professional computer (3000 series), plus C2N cassette deck and dust cover, also manuals and 'The PET Revealed' book with many software tapes. Immaculate condition £280.

Belgian CBM64 user wishes to swap software. If interested contact Vandekenckhove, Epsomlaan 28, 8400, Ostend, Belgium.

High quality 80 column tractor - friction feed dot matrix printer with interface for CBM64 or VIC 20. £200ono. Tel: (0742) 883054 or write to 13 St. Andrew Road, Deepcar, Sheffield S30 5SA.

Commodore software to swap or sell. Many British and American titles. Programs include: Zaxxon, Blue Max, Jumpman Jr. and many more. Write (send your list) to Per O. Stava, 4274 Stol, Norway (All letters answered).

PET 32K, Basic 3 & 4 switchable, toolkit, M/L utility ROM, 4K "instant ROM", Reset button, Sound box, 3040 dual disc drives, IEEE-488 to RS232C serial interface, dolphin BD80 printer, dolphin BD80P printer all cables, Wego mains switching unit, over 140 disks, most with software including wordcraft, 6502 assembler, integer basic compiler, petspeed (including 'dongles'), games, utilities etc. and all manuals £950 - can possibly deliver. Tel: D.M. Searson (0254) 57202, 9-5.30pm.

For Sale - Vic 20, cassette deck, 16K RAM, Quickshot II, Intro. to Basic 1 & 2, Programmers Reference Guide, tapes, cartridges, Dr Watson Assembler, dust covers £160ono. Tel: (Aldridge) 54484.

1520 colour printer boxed as new. Two rolls of paper £80. Vicket four high speed turbo cartridge and monitor £17. Vicket II ROM £15. Enquiries Mr P Raynard, Chanctonbury, Dunnings Road, East Grinstead, West Sussex.

Daisy wheel printer for PET 2001-8 wanted. Contact: Trevor Burton, Bunbury, Cheshire, CW6 9SX. Tel: (0829) 260868.

Commodore 64 owners with disk drives are invited to join a unique software user group. For details of our excellent Public Domain library, contact Club 64, 85 Upper Drumcundia Road, Dublin 9, Ireland.

For Sale: Commodore easyfile database system. Disk-based - unwanted gift - £50 -Contact Andrew 01-304 1186.

20 games for sale including 12 amazing hits (eg. Beachead etc.) Price negotiable. Ring Ipswich (0473) 50728 and ask for Richard after 6pm.

CBM64 owner wishes to swap software with users abroad. Send list of software to: W. Atkinson, 7 Silverlands Avenue, Oldbury, Warley, West Midlands B68 8EQ, England (I have 400+ titles).

American C64 enthusiast seeking British C64 enthusiasts for pen-pals, all levels. Greg S Hanson, Villa Manor 36, Princeton, MN55371 USA.

Commodore 64 games for sale. All original titles of 30 games £4. Tel: 05432 52852.

ADVERTISERS DIRECTORY
OCTOBER 1984

Activision	(s) 17
Adcomp	29
Amplicon Group	IFC
Anger Productions	(s) 21
Anirog	IBC
Arrow Micro Services	(s) 30
Audiogenic	(s) 26
Aurac	51
BSF	24
Calco	27, 44
Car Fleet Controls	29
Cascade Games	(s) 14
Chronasonic	57
Commodore	8, 9
Corgi Books	50
D&P Magnum	(s) 30
Durell Software	(s) 8, 9
Duckworth	13
Dynamite Software	27
Dynavision	(s) 4
Fieldmaster Software	27
Gilsoft	(s) 4
Impex Software	22
JCL	44
Level 9	(s) 14
Mermaid Software	27
Microdeal	17
Microport	(s) 28
Micropower	(s) 2, 32
Midland Computers	(s) 21
M.P.S. Software	(s) 28
Precision Software	29
RAM Electronics	47
Rosetti	14
Rotronics	56
Screens Microcomputers	44
Small Systems	52
Stack Computer Services	(s) 11
Superior Software	OBC
Supersoft	49
System 3 Software	(s) 25
Talent Computer Systems	(s) 23
Tekform	22
Terminal	(s) 31
Triptych Publishing	4, 5
Viza Software	54
Zero Electronics	22

HERE'S MY CLASSIFIED AD

Please continue on a separate sheet of paper

I make this ______ words, at ______ per word so I owe you £ ______

Name ______

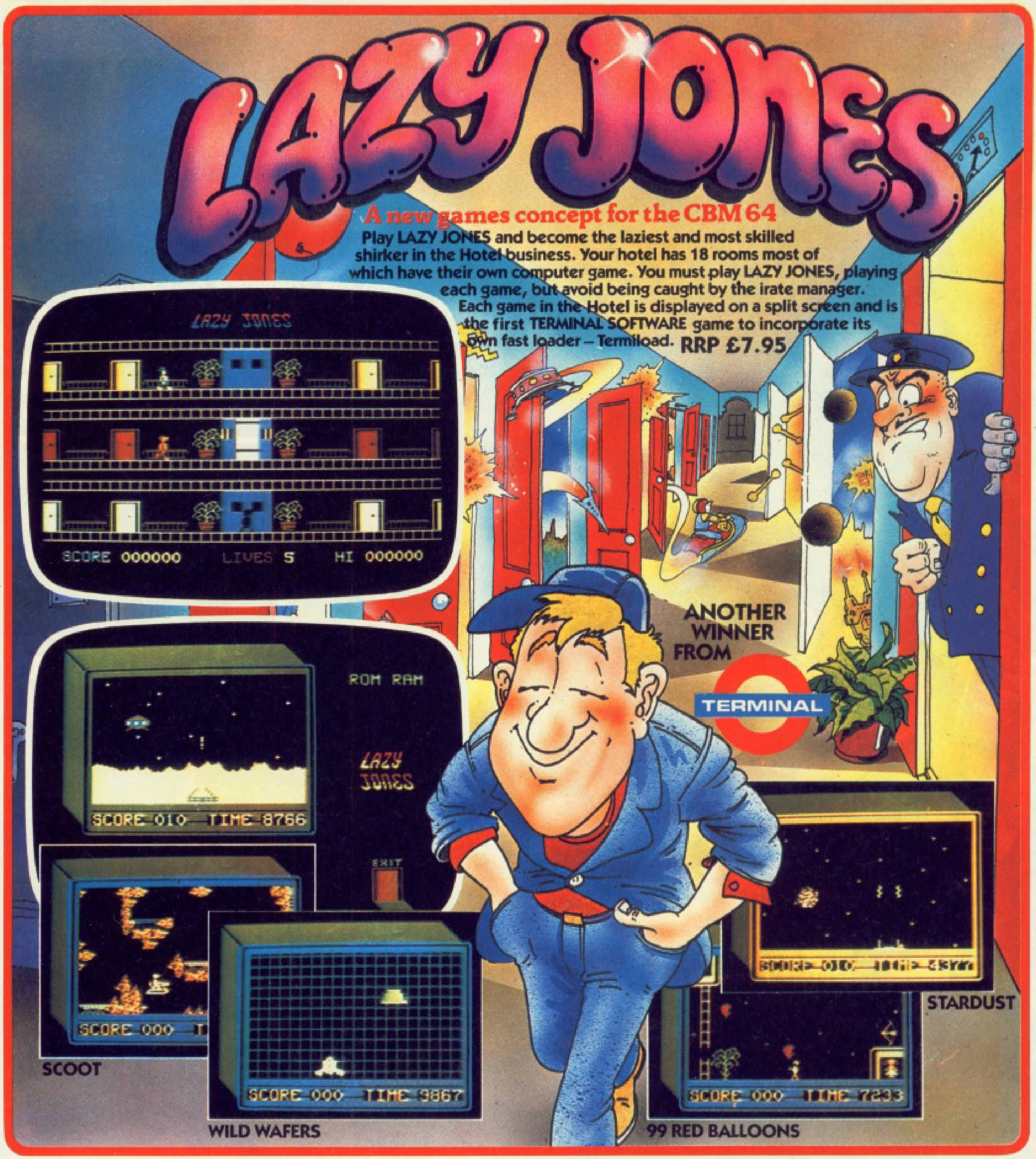
Address ______

______ **Telephone** ______

Send your classified entries to:

Classified Department,
Commodore Computing International Magazine,
167-169 Great Portland Street,
London W1N 5FD.
Tel: 01-636 6615

Private readers – FREE
Trade advertisements – cost 40p a word
Semi-display – why not make your advertisements more substantial by choosing the semi-display rate. It is only £8 a single column centimetre.
Please ensure that **all** classified advertisements are prepaid.


LAZY JONES
LAZY JONES
SCORE 000000 LIVES 5 HI 000000
ROM RAM
LAZY JONES
SCORE 010 TIME 8766
EXIT
SCORE 000 TI
SCORE 000 TIME 9867
SCORE 010 TIME 4377
SCORE 000 TIME 7233
ANOTHER WINNER FROM
TERMINAL

A new games concept for the CBM 64

Play LAZY JONES and become the laziest and most skilled shirker in the Hotel business. Your hotel has 18 rooms most of which have their own computer game. You must play LAZY JONES, playing each game, but avoid being caught by the irate manager. Each game in the Hotel is displayed on a split screen and is the first TERMINAL SOFTWARE game to incorporate its own fast loader – Termiload. **RRP £7.95**

SCOOT

WILD WAFERS

99 RED BALLOONS

STARDUST

Terminal Software Games are available from –

International

Tial – Sweden
Ozisoft – Australia
Alpine – New Zealand
S.P.I.D. – France

Retail

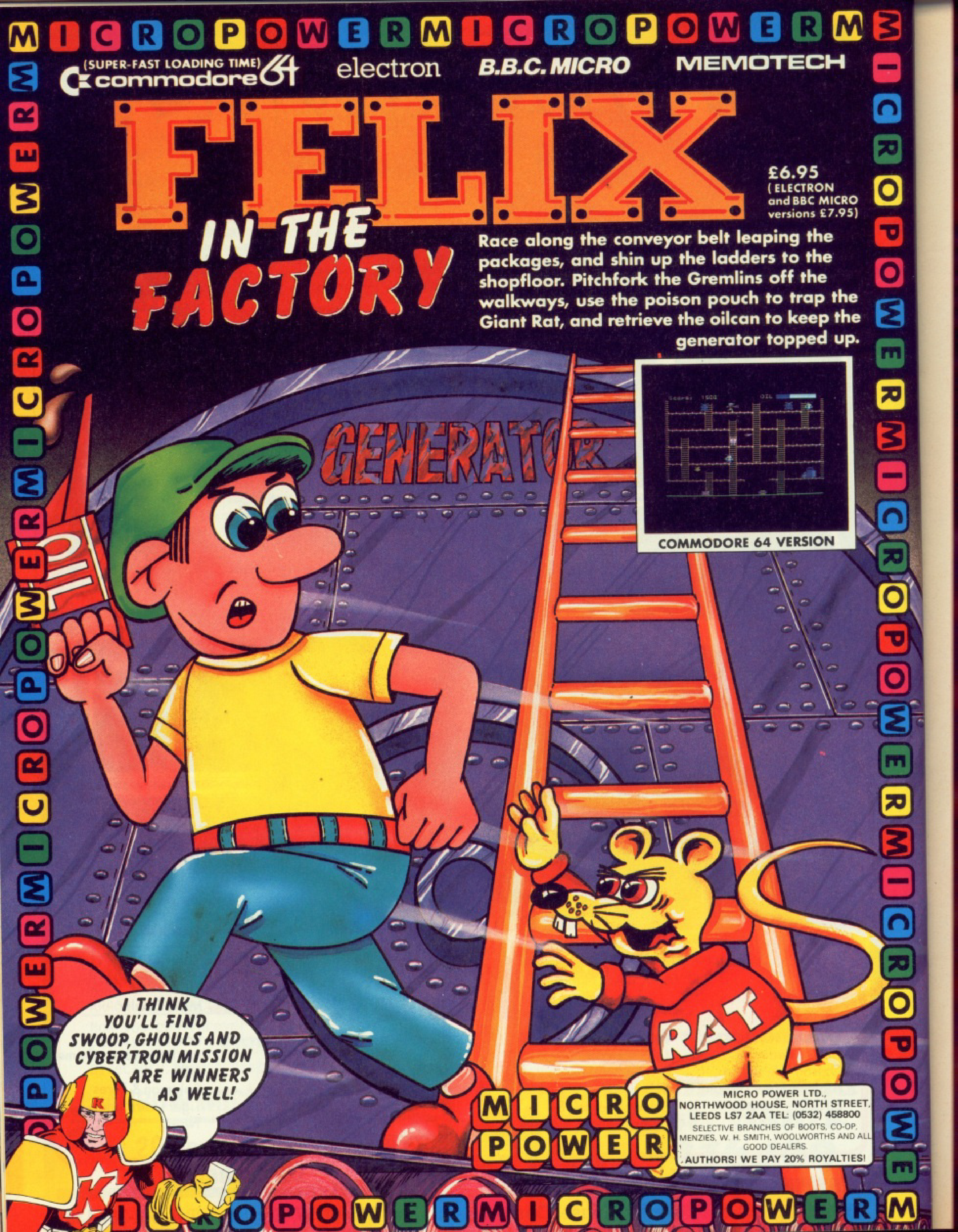
John Menzies
Dixons Software Express
Makro
Selected Lewis's &
Co-op Stores

Distributors

Bulldog
Centresoft
ESD Electronics
Gordon Howson
Lightning
LVL
Micro Dealer
PCS
Prism
R & R Computer Games
SDL
Solomon & Peres
Tiger Distribution
Twang

TERMINAL

Terminal Software, Derby House, Derby Street, Bury BL9 0NW, England. Tel. 061-761-4321



MICROPOWERMICROPOWERM
GENERATOR
OIL
RAT
I THINK YOU'LL FIND SWOOP, GHOULS AND CYBERTRON MISSION ARE WINNERS AS WELL!
MICRO POWER

(SUPER-FAST LOADING TIME) commodore 64 electron **B.B.C. MICRO** **MEMOTECH**

FELIX IN THE FACTORY

£6.95
(ELECTRON and BBC MICRO versions £7.95)

Race along the conveyor belt leaping the packages, and shin up the ladders to the shopfloor. Pitchfork the Gremlins off the walkways, use the poison pouch to trap the Giant Rat, and retrieve the oilcan to keep the generator topped up.

COMMODORE 64 VERSION

MICRO POWER LTD.,
NORTHWOOD HOUSE, NORTH STREET,
LEEDS LS7 2AA TEL: (0532) 458800
SELECTIVE BRANCHES OF BOOTS, CO-OP, MENZIES, W. H. SMITH, WOOLWORTHS AND ALL GOOD DEALERS.
AUTHORS! WE PAY 20% ROYALTIES!